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MILITARY GYMNASTICS

FARROW

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A MILITARY SYSTEM

OF

GYMNASTIC EXERCISES

AND

A SYSTEM OF SWIMMING.

PREPARED UNDER THE INSTRUCTIONS OF THE SUPERINTENDENT,
FOR THE USE OF THE CADETS OF THE UNITED STATES
MILITARY ACADEMY AND MILITARY COLLEGES.

By EDWARD S. FARROW,
ASSISTANT INSTRUCTOR OF TACTICS AT THE U. S. MILITARY ACADEMY.

NEW YORK.
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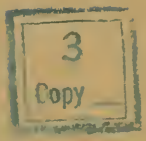

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PREFACE.

In the preparation of this *Course of Gymnastics*, I have endeavored to meet a long felt want in the Corps of Cadets at the United States Military Academy.

It has also been my aim, by briefing and generalizing, to make the work suitable for a text book in the Army and the various Military Academies, covering, as it does, that course of training which, taken in connection with the *school of the soldier*, is essential to the proper training of all soldiers.

I have purposely avoided separating the exercises on the various machines into *times and motions*, in order that the instructor might introduce such additional exercises and variations as seem to him most proper. Those explained in the text are deemed sufficient to call into play all the muscles and parts of the body; but it is expected that the instructor will frequently make additions for the sake of greater variety, and in so doing, or when confining himself to the text, he can readily divide the exercises into the proper *motions*.

I wish to publicly acknowledge my indebtedness to the work of Messrs. Ravenstein and Hully, for much of the substance of the text and many illustrations taken from original designs. I am likewise indebted to "Maclaren's Gymnastics," the English work, "Walker's Manly Sports," and a few other works of reference.

It is hoped that the manner in which the subject is treated will enable the classes to make rapid progress in one of the most important branches of their instruction.

E. S. F.

West Point, N. Y., *August*, 1881.

LETTERS.

HEADQUARTERS U. S. CORPS CADETS,
West Point, N. Y. June 17th, 1881.

2nd Lieut. E. S. Farrow, 21st Infantry, Assistant Instructor of Tactics, West Point, N. Y.

DEAR SIR:—Provided you can do so without interfering with your other military duties, the General Commanding desires that you draw up and submit for examination a system of gymnastics fully adapted to a proper gymnasium building.

It is desirable that it should be as brief as may be consistent, of course with the main idea of complete instruction.

Very respectfully,
Your obedient servant,
H. M. LAZELLE,
Lieut. Colonel Commanding Corps Cadets.

WEST POINT, N. Y., August 3d, 1881.

To Col. H. M. Lazelle, U. S. A., Commandant of Cadets.

COLONEL:—I have carefully looked through the "Military System of Gymnastics," prepared by Lieut. E. S. Farrow, 21st Infantry. Our gymnasium, poor as the room and apparatus devoted to it have been, has nevertheless had wonderful results in the development of the activity and muscular power of the cadets.

Thinking that what is worth the doing at all had better be *well* done, I desired your tactical officer, Lieut. Farrow, to present some system for trial and adoption.

I think he has succeded admirably and am grateful to him for his effort and promptitude in the work, and to you for the encouragement you have given him. Yours truly,

O. O. HOWARD,
Brigadier and Bv't. Major General Commanding Department of West Point.

GYMNASTIC EXERCISES.

1. The object of this course of gymnastics is to develop and increase the physical powers of the cadet by advancing him, step by step, from the preliminary extension movements to the most arduous and complicated machine exercises, his advancement being always regulated by his growing strength and capacity.

2. On the first day of every quarter, the measurement of the *chest*, *fore arm* and *upper arm*, also the *height* and *weight* of each cadet will be noted in the *Measurement Book*, and will form the data for the Quarterly Report of Gymnastics (Form A).

3. In cold and windy weather, cadets will wear the great coat to the gymnasium. Section Marchers will be held responsible that on returning to quarters, after drill, the overcoat be worn, buttoned throughout with the collar turned up.

4. The Instructor of Gymnastics will be held responsible for the condition of the gymnasium, the apparatus and stores. He will see that the apparatus is properly dusted and scraped, the tan raked, the floor cleansed and the walls lime-washed at least twice a year. He will see that the maximum amount of fresh air enters the building, without occasioning draughts.

5. The duration of the drill in the gymnasium shall not exceed one hour daily. The instructor will so sectionize the exercises of the course (except swimming) as to practice them progressively during the quarter, and so far as is practicable, he will follow the practice of each day by a review of preceding exercises, in more or less variety, thereby insuring greater interest in the work, and giving special employment to special parts of the body, in keeping with the principle that all muscular power is intermittent.

6. At the close of the quarter the progress of each cadet will be tested, and those who have acquired sufficient strength and

activity to enable them to perform all the exercises of the course, will, in the discretion of the Commandant of Cadets, be relieved from further attendance at the drill at the gymnasium, or be detailed as Acting Assistant Instructors of Gymnastics. The weak and awkward will be kept under gymnastic training during the second and third quarters if necessary.

7. The art of swimming, including the swimming of stock, will be taught as a military duty, at such time as the Commandant of Cadets may direct, during the Annual Cadet Encampment. The skilled swimmers in each company will be ascertained, and when desirable may be detailed as Acting Assistant Instructors. To prevent accidents or loss of life through incautious bathing, a few expert swimmers will be detailed to hold themselves in readiness during each bathing parade, to hasten to the assistance of any man in danger, and in the event of accident to summons the nearest medical aid.

8. The practical aspects of the exercises will be carefully regarded. The instructor should so bring the resources of the gymnasium to bear on the cadets that they may readily overcome the dangers and obstacles of their professional duties by being enabled to undergo fatigue, privations and exposure, being physically strong and having dexterity of movement.

9. Ordinarily the instructor or one of the assistant instructors will perform each exercise, and have the cadets follow in numerical order, each holding himself in readiness in his proper time to advance to the machine, perform the exercise and take position preparatory to the next exercise, or so as to observe the performance of each cadet.

The instructor will suppress all laughing at the mishaps or failures of the members of the sections, and will see that those of different sections, when in various stages of practice, do not intermix.

Position of the Gymnast.

10. The *fundamental position* of the gymnast should be accurately acquired.

After effecting an equal squareness of the body and shoulders

to the front, place the heels well closed on the same line, with the knees straight and the feet forming an angle of about 60°.

Let the arms hang naturally, slightly turning in the elbows,

with the palms of the hand turned slightly to the front and the little fingers touching the seams of the trowsers, the thumb and forefinger closed.

Hold the body erect on the hips, inclining it sufficiently forward to cause its weight to principally bear upon the forepart of the feet.

Hold the head erect with the eyes straight to the front.

Extension Motions.

11. In order to supple the figure, expand the chest and give freedom to the muscles, the following *motions* should be practiced and often recurred to, and should be followed by trunk, leg and arm exercises in such variety as the instructor deems expedient.

12. The instructor commands :

1 *First.* 2 MOTION.

Hold the body erect, the heels close together and the hands hanging down on each side. Slightly expand the chest, raise the

head, throw back the shoulders and strengthen the muscles of the back. Bring the hands and arms to the front, the fingers touching at the points, nails downwards. (Two.) Raise them in a circular direction well above the head, the ends of the fingers still touching, the thumbs pointing to the rear, the elbows pressed back, and shoulders kept down. (Three.) Separate and extend the arms and fingers upwards, the palms of the hands touching, force them obliquely back, till they come on a line with the shoulders, then gradually lower them to the fundamental position, endeavoring as much as possible to elevate the neck and chest.

This motion should be frequently practiced, with the head turned to the right or left, the body kept square to the front, as a good neck exercise.

1. *Second.* 2. MOTION.

13. Turn the palms of the hand squarely to the front, pressing back the thumbs, with the arms extended, and raise them to

the rear, till they meet above the head, the fingers pointing upward, with the ends of the thumbs touching, the shoulders pressed back. (Two.) Keep the arms and knees straight, and bend over from the hips till the hands, if possible, touch the feet, the head being brought down in the same direction. (Three.) With the arms flexible from the shoulders, raise the body gradually and resume the fundamental position.

This motion should be done gradually, so as to feel the exertion of the muscles throughout.

1. *Third.* 2. MOTION.

14. Bend the forearms upon the arms upward and toward the body, having the elbows depressed, the closed hands touching on

the sides of the little fingers, and the knuckles upward, being raised as high as the chin and at the distance of one foot before it. (Two). Throw the arms forcibly backward, with the fore-arms bent as much as possible upon the arms and the palmar sides of the wrists turned forward and outward. This motion is to be repeatedly and quickly performed by the commands, *one, two—one, two.* (Three). Resume the fundamental position.

1. *Fourth.* 2. MOTION.

15. Extend the arms at full length, and on a level with the shoulders, in front; the palms of the hands in contact. (Two).

Thus extended, the palms retaining their vertical position, throw the arms forcibly backward and slightly downward, so that the backs of the hands may approach each other as nearly as possible. At the same time the body is raised upon the toes. This motion also to be repeatedly and quickly performed by the command *one, two,—one, two.* (Three). Resume the fundamental position.

Walking.

16. Walking is a most useful and simple mode of progression, and exercises the most agreeable influence over all the functions.

A gook walking and running course should be provided near the gymnasium, and the sections should be thoroughly drilled in the mechanism of walking in the different "times." The instructor cannot over-instruct, in the outset, in the analysis of the *slow* walk or march. Here the weight of the body is advanced from the heel to the instep, the toes turned out. One foot is advanced with the knee straight, the toe inclined to the ground, which it touches before the heel, in such a manner that at the conclusion of the step, the sole is nearly parallel with the ground, which it then touches with its outer edge. The other foot is then raised from the inner edge of the toe and likewise advanced, inclined and brought to the ground. Let it be remembered that the toe externally first touches and internally last touches the ground, in the graceful march.

17. In the *moderate* pace, the weight of the body is advanced from the heel to the ball of the foot, and here it is the ball

of the foot (and not the toe) which first touches and last leaves the ground—its outer edge first breaking the descent, and its inner edge last projecting the weight. In this step, much less of the foot as lively covers the ground, and by securing the nearer and stronger points of support, the walker is better prepared for the increased quickness and exertion of the step.

18. In the *quick* pace, the weight of the body is advanced from the heel to the toes, which are least turned out. The outer edge

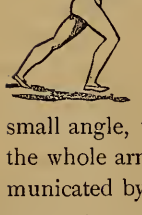
of the heel is first to touch the ground and the sole projects the weight. Here still nearer and stronger points of support are taken. In the progressive paces, . will be seen that the weight is successively thrown more forward and the toes less turned out.

19. Walking exerts a more wholesome influence over the economy when done over inclined and undulating ground.

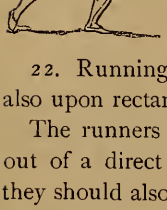
The sections should be frequently practiced in ascending and descending inclines of variable slope, and to walk bearing different weights.

Running.

20. In running there is a series of leaps from each foot alternately. The foot which is left behind quits the ground before the advanced foot is firmly fixed. Hence it is that a fall is a common occurrence, the centre of gravity being so uncertain while passing from one leg to the other. The upper part of the body is inclined forward, the head thrown backward, the breast projected and the shoulders steady ; the upper arms are kept near the sides, the elbows bent and forming a small angle, the hands closed with the nails turned inwards, and the whole arm slightly moving in obedience to the impulse communicated by the other parts.



21. At every step, in running, the knees are stretched out and the legs are kept as straight as possible. The spring is made rapidly from one foot to the other, and the tread is neither with the balls of the toes nor with the whole sole of the foot. During the time of running long inspirations and slow expirations are important. Running should cease as soon as the breath becomes short and perspiration takes place.



22. Running should be practiced on ground of every variety, also upon rectangular, square and circular plots of ground.

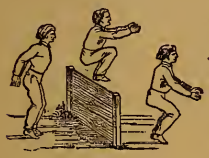
The runners should become accustomed to turning promptly out of a direct line, a faculty possessed by few if any animals ; they should also run up and particularly down hill, with and without burdens.

Leaping.

23. In leaping the joints of the hips, knees and feet should act

in harmony, and lightness and firmness should characterize the act.

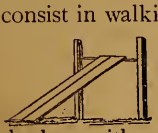
The leaper *springs off* with the toes or balls of one or both feet, and may be assisted by a swinging of the arms. A short *run* is of great advantage in the long leap. In the *flight* the position of the arms should be such as to assist in keeping his equilibrium and to assure his reaching the ground properly, while the knees are drawn up to the chest.



In *landing* the balls of the feet touch first, and the legs immediately yield by bending the joints of the feet, legs and hips, and thus break the force of the shock. In all leaping it is important to draw in and retain the breath at the moment of the greatest effort. When a run precedes the leap, the leaper directs his eye to the spot from which he intends to spring off, but the moment he has reached it, he looks to the object to be cleared.

24. The *deep leap* must be practiced with great care, and done both with and without the hands, and from sitting, squatting and standing positions. To avoid the shock, the body must be kept in a bent position, and the fall be upon the balls of the toes. If the leap is very deep the leaper drops forward upon his hands. The legs should never yield suddenly or too much. When leaping from a wall or the top of a counterfort, hanging by one or both hands is advantageous. By these means the height of the wall is relatively diminished, and the disengaged hand or feet push the body off the wall.

25. The exercises at the storming board are very valuable. They consist in walking and running up the board (from 10 to 15 feet long and 2 feet wide), and halting on reaching the top, when the leaper either returns or leaps sidewards or to the front. Afterwards he takes the leap without halting at the top and confines himself to two or three steps upon the board. The exercises may be varied by placing a leaping stand beyond the board.

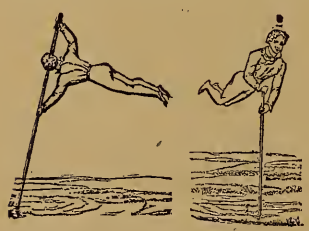


The exercises become more difficult as the board is made steeper.

26. Leaping with a pole is a union of leaping and vaulting.

The pole should be strong and from 8 to 12 feet long. In handling the pole the upper hand has the thumb upward, and its

position is regulated by that of the lower hand, as this advances higher up, the former must proportionately. The lower hand should be placed about the height of the leap. The planting of the pole and the spring must take place at the same instant, in order that the swing may be perfect and the upper and lower members act in unison. If the left hand is below, the leaper must spring with the left foot, and *vice versa*. During the swing upward, the leaper must turn his body, so that when he begins the descent his face shall be directed to the place where the leap was begun. To quit the pole, give it a push with one hand, at the moment of greatest height. The descent must take place upon the balls of the toes, and with a sinking of the knees.



27. The *long leap* with a pole, so frequently applicable in a country intersected with small rivers, ditches and ravines, may be done similarly to the high leap, making the curve of the leap less; or by forcing the body up very high by the pressure of the hands (one of which is on or near the end of the pole), the leaper can swing over the top of the pole, and allow it to pass between the legs while descending.

Trunk Exercises.

28. The *body* or *trunk* admits of innumerable movements which should be frequently practiced. Standing astride, with the hands

on the hips (thumbs in front or behind according to circumstances), bend the body forwards, sidewards and backwards, and gradually give it circular motion, by passing in succession through the forward, sideward, backward, sideward positions without straightening. The twisting of the body to left and right, and the independent turning of the lower part of the trunk (wriggling), are very useful exercises.

Leg Exercises.

29. An excellent exercise for learning to hold the balance, standing on one leg, is done as follows: Starting from the fundamental position, move the leg forward or backward, in a circle which can be described inwards or outwards. The exercise may be varied by raising the leg backwards. Keeping both legs straight, the exercise becomes more difficult, as the leg is raised higher.

30. Standing in the fundamental position, sink gradually down to the squatting position, rising upon the toes while sinking down, lock the heels, spread the knees apart, and hold the body erect. The body is repeatedly raised and lowered by the command *one*, *two*,—*one*, *two*. The exercise may be varied by keeping the heels upon the ground, the knees locked throughout, and gradually raising the arms forward when sinking down.

31. Standing astraddle (the legs not too far apart at first) the body is alternately lowered by bending the left and right knee.

The feet are gradually placed wider apart and the body lowered more and more.

32. Standing firmly upon one leg, squat down and rise and repeat by the command *one*, *two*,—*one*, *two*. The more the leg is bent or the more the body is lowered, the more trying the exercise. When squatting on one heel in this manner, the arms should extend forward and the raised leg, perfectly straight, should not touch the ground.

33. A good exercise is found in raising the heels while the upper part of the leg or thigh remains as nearly as possible in its original position. The exercise may be varied by first bringing up the left, then the right heel, both behind and in front, and becomes the more difficult as the lower leg approaches the vertical. The exercise should be accomplished in regular cadence, the hands at first being permitted to assist in raising the heel.

Arm Exercises.

34. The arms admit of a great variety of exercises, and in them all the hands are caused to assume a variety of positions. The *ordinary* position is when the knuckles are turned to the front: the *reversed* position when they are to the back; the *side* position when they are on the outside; and the *twisted* position when they are on the inside. The turning and twisting of the arms so as to vary the positions of the hands is an exercise of great value and should be particularly practiced when carrying dumb-bells and using the Indian clubs.

35. One or both arms may be swung around in a circle in a variety of ways.

Place the left foot forward, the left hand on the hip; give the right arm a circular motion backwards. The same is then done with the left arm, when the right foot is put astride forwards.

Finally both arms are swung around at once in the same or in contrary directions. When both arms are swung round at once, care must be taken to retain the fundamental position.

36. Place the left foot astride to the left, with the right hand on the hip; raise the left arm sidewards and horizontally, and give it a circular motion in front and upwards; first slowly, then rapidly, keeping the arm well straightened.

37. Raise both arms sidewards and horizontally,

and give a circular motion to both in front and downwards ; clap the hands behind the back, after six revolutions. The arms should cross each other in front and close to the body.

38. A good *funnelling* exercise may be practiced by giving the arms a narrow circular motion, forwards and backwards. The figure of "eight" is an exercise in which the arm is extended sidewards, moves in circle in such a manner as to describe the figure "eight" in a vertical plane, the point of intersection being opposite the shoulder.

Combination Exercises.

39. Many combinations of the trunk, arm and leg exercises afford excellent practice.

Bending the back forwards and backwards, touching the ground with the fingers, while the feet are together, is a good one. The "Sawyer" exercise, in which the arms are swung between the legs ; the "pounding," where the back is bent and rapid thrusts are made downwards, one arm after the other ; and the "see-saw," made by bending sidewards, the arms extended horizontally, are all worthy of practice.

40. Exercises in the *leaning position* should also be practiced frequently. Sink and rise by alternately bending and straightening the arms, thus touching the ground with the breast, the back or side.

Spread out the arms forwards or sidewards, and raise an arm, or a leg, or both together. Hop by means of the hands, the feet, or both at once, first without gaining ground, then moving forwards, backwards or sidewards.

41. A pretty and useful exercise consists of passing from the leaning position fowards to that, backwards by squatting between the arms. The exercise is not easy at first.

42. The *twirl step*, sidewards, is another useful exercise. Start from an erect position, the heels together and the hands resting on the hips; place the left foot astride to the left, turn to the left about on the left foot as a pivot, and keep the legs apart. In this position, turn to the right about and plant the right foot beside the left. Variations of the twirl step can be readily practiced.

The following is a good one: starting from the first position, place the left foot astride to the left, also the right foot astride to the left, crossing the left leg in front, turn to the left about on the balls of both feet, keeping them stationary. Repeat the exercise.

43. The sections should daily practice a part or all of the following feats of strength and supplenness of the limbs.

a. Standing straight on one leg, the other raised and grasped at the instep, rock the body to and fro.

b. Shoulder a leg forwards, standing upon the other leg.

c. Holding the lower part of one leg horizontal and standing on the other, move the body so as to cause the bent knee to approach the ground as nearly as possible.

d. Shoulder a leg backwards, standing upon the other leg.

e. Bend over forwards until the shoulders touch the legs, while standing.

f. The same when sitting.

g. Bend over forwards and shoulder the legs behind, while sitting.

h. Sit astraddle upon the ground and bend sidewards till the shoulder touches the leg.

i. Lever upon either hand, and turn the body to the right or left.

k. Stand up and bend backwards until the hands touch the

ground. This feat should at first be produced when standing back towards and near a wall, down which the hands move steadily.

l. Walk on the knees, the hands grasping the insteps.

m. Standing on one leg, bend backwards and rest in a horizontal position.

n. Standing on one leg, kept constantly straight, bend forwards and rest in a horizontal position.

o. Standing on one leg, kept constantly straight, bend sidewards and rest in a horizontal position.

44. Before *tumbling* the sections should be practiced in standing head downwards, upon the head, the neck, the fore-arms and the hands.

45. All tumbling and somersets must be done on soft ground, or on a good mattrass. In many cases a horizontal rope, the ends of which are held by two comrades, is of great service. In *tumbling over forwards* and *backwards*, also in the somersets forwards and backwards, the body is first allowed to rest upon the head and hands, then upon the hands only, and finally neither the hands nor the head render any assistance.

The *Cart-Wheel* is a somerset sidewards, and should be finally practiced without the hands touching the ground.

46. Exercises for two men should also be practiced.

That of the *barrow* is interesting and valuable. The "barrow" goes down into the leaning position and opens his legs. The "bunter," placing himself between the legs, raises them off the ground, and the barrow begins to walk forwards or backwards. By raising the legs well above the shoulders, this be-

comes a good preliminary exercise in standing and walking on the hands.

47. The *roll* and the *wheels*, both *chest to chest* and *back to back*, are valuable exercises. The latter is the most difficult. On starting No. 1 stands astride forwards, his back slightly bent and his arms raised sidewards and bent. No. 2 stands behind No. 1, and raising on his hands, throws his legs over the shoulders of No. 1, who at once grasps the legs of No. 2, bends further forward till No. 1 is seated upon his shoulders, and finally reaches the ground, when he assumes the position previously occupied by No. 1, while the latter rises on his hands, etc.

Carrying.

48. In this group of exercises the instructor can teach many movements of real service in active life. He should teach them in great variety in the following order :

a. One man carried by two men.

b. One man carried by one man.

c. Two or more men carried by one man.

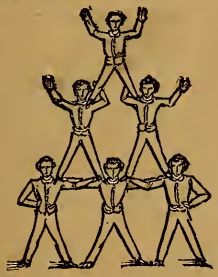
The drawing shows a few exercises, to which the instructor may add to any desired extent.

Pyramids.

49. Sufficient practice in carrying will render the formation of

pyramids, both flat and conical, very easy. These exercises rank among the most useful as assisting in climbing walls and entering houses. They offer an unlimited extent of variations. As a general rule, the "light weights" should be selected for the highest story, and the basement story should consist of a sufficient number of men to render the support strong and the climbing easy.

50. The basement of the flat pyramids is formed in line and facing the wall, house, etc. If the combination is such as not to render climbing easy, the basement grasp shoulders and squat on the heels; the second story mounts and does likewise; when all have mounted, the whole rise at command of the instructor.



The drawings show a few exercises to which the instructor may add to any desired extent. All precautions must be taken against falls. A soft ground and a climbing rope suspended from the ceiling or made fast to the top of the wall, will prove of great advantage.

Antagonistics.

51. When these exercises are properly conducted, they not only assist in acquiring strength and agility, but exercise an excellent influence upon the ethics of the antagonists. All symptoms of irritability or hot-headiness should be promptly reprimanded. The antagonists should *meet* and *part* as friends.

52. *Pulling at a rope.*—The rope may be held in the usual way, or its end may be passed round the neck. The antagonists may also stand with their backs towards each other, passing the rope over either shoulder and holding it in front with one or both hands.

53. *Pulling, sitting on the ground.*—The antagonists sit on the ground, place the soles of their feet against each other, lean forwards and seize a staff or ring. An endeavor is then made to pull each off the ground. By yielding, in turn, a see-saw may be readily accomplished.

54. *Pulling at a rope passing over one or more rollers.*—The rollers should be near the ceiling. The antagonist is defeated as his feet leave the ground. The exercise may be varied by fixing the rollers near the ground and considering the antagonist defeated when he is forced to plant his feet within a certain distance of the rollers.

55. *The Styrian Wrestle.*—The antagonists stand opposite each other with the outsides of the advanced feet placed against each other, the hands clasped and held over the feet. At the command READY, each endeavors to pull or push his antagonist from his position, without changing the position of his own feet. The antagonist who first loses his standing, even by slightly shifting the positition of one of his feet, is defeated. A, by forcibly pushing B's hand as indicated, and then forcing it well outwards, will cause B to fall on his back.

56. *Hopping on one leg.*—The antagonists fold their arms upon the chest, and standing upon either leg, rush against each other, endeavoring to force down the other leg, when rushing against the antagonist and hopping on the left leg, present the left side towards him ; and if he is superior in weight, avoid his rush by hopping quickly aside. It is not permited to catch hold with the hands.

Wrestling.

57. This exercise should take place in the open air, upon cocoa-matting or a mixture of tan and saw-dust. The instructor will first show the hold and position for attack and defence, and then explain the various falls. The antagonists being arranged in two lines facing one another, the men of one line will attack, while those of the other offer all the facilities for it. After having mastered the modes of throwing a man, the line is taught to stop each mode of attack. After teaching the *Cumberland* style, the instructor will practice the sections in *loose wrestling* ("catch-as-catch-can").

58. *The Hold.*—Place the right arm inside the left arm of your antagonist, hook the fingers, and press the back of the left hand upon his left loin. Place the legs astride, the left foot about two feet in advance, and the weight of the body resting exclusively upon the right leg. The shoulders must be squared and the collar bones of both wrestlers on the same level.

To *improve your hold*, shrink the right breast under that of your antagonist, tighten the arms around his loins, or pinion his right arm by pressing upon it with your left.

59. *The Buttock and Cross-Buttock.*—These movements are similar, and are best practiced with a slack hold. The buttock is done facing to the right and the cross-buttock facing to the right about. Suddenly turn to the right so as to place the left hip under your antagonist's belly; pull him close towards you, stoop forward and lift him off the ground. By continuing to turn round, he will fall on his back, under you.

In the cross-buttock, face to the right-about, until the back is turned to your antagonist, and proceed as before. When faced around, place the feet in front of his feet and not between them and keep the hands locked during the movements, shifting them round by degrees.

To save yourself from being thrown, hold your antagonist firmly round the body, crouch down,

and withdraw the head. On the other hand, if the buttock fails, try the *back hank*.

60. The *Back Hank.*—Move as if about to give the buttock, so as to stand with the left side toward your antagonist; raise the

left leg backwards and pass it from the inside round your antagonist's right leg, so as to bring the instep in front of his shin. While making this movement, remain nearly upright, or your antagonist will succeed in throwing you forward. When the movement is made, turn suddenly to the left and force your antagonist over backwards.

61. *The Hank or Back Heel.*—Pull your antagonist toward you, and place the left heel behind his right. Throw the whole of

your weight upon him, and, at the same time, force his foot up forwards. You can then easily force him backwards. If attacked in this manner, put back your foot; or if caught try to face while coming to the ground; or you can try the *right leg hipe*. Hipe your antagonist with the right thigh, when he advances his left leg to *hank* you. *Hamming* is done in a similar manner to the back heel, when the leg is passed behind the knee of the antagonist instead of behind his heel.

Be careful to get the leg out of the way, and should the antagonist raise his left leg, swing him round to the right.

62. *The Left Leg Hipe.*—Lift the antagonist off the ground, hugging him closely; swing him round to the right, turn-

ing in the same direction, and suddenly strike the inside part of his right thigh with the outside of the left thigh. You will thus bring him out of his balance, and if the impetus of the swing is used, he must feel you falling on top. If the hipe does not take, try the buttock or the back hank. To stop the left leg hipe, cross the left thigh of your antagonist, as he is about to insert it, with the right knee, and when he attempts to lift you off the ground, try and prevent being lifted by shrinking the breast under him. Your antagonist, previous to hiping you, will step in with his right leg, and thus enable you to give him the back heel with the left

leg. While all hiping is a little dangerous, the right leg hipe is by far the less risky.

63. *Left Leg Stroke.* Strike the right leg of your antangonist with the left leg in such a manner that your knee is outside and your instep inside, and forcibly swing him around to the left. This stroke is stopped by hamming with the left leg.

It can be done outside the leg instead of in and out. Combinations of this stroke are :

Strike your antagonist with the left leg, bring it quickly down again, and throw him over the right buttock.

Make the right leg stroke and left leg hipe.

Make the left leg stroke and right leg hipe, etc.

Weights.

64. The lifting of weights affords a series of exercises quite invaluable to the acquirement of grace of motion in the dumb-bell and club exercises. The weight should be "put up" without a swing. The gymnast stoops down, with his feet apart and knees bent, putting his left hand on the knee and his right hand (the arm bent) upon the weight, which he steadily "puts up." Afterwards the weight is put up with a swing Upon being lifted from the ground, it is allowed to swing backwards between the legs, and as it swings forwards, it is put up above the head. In the first practice, the weight is put up on the upper-arm, or shoulder, with both hands, and then raised above the head.

65. A great variety of interesting exercises in this connection can be readily devised, *e. g.* Lying on the back with the arms extended backwards or sidewards, the gymnast can raise the weights, one or more at a time, in various ways. There should be at least two 10, 15, 25, 50, 75 and 100 lb. weights in the gymnasium.

The Discus.

66. Throwing the discus is an excellent exercise for the arm development. To perform the feat, the thrower balances the discus well on the right (or left) arm, and at the moment it leaves the hand, he throws the whole of the right (or left) side forward, thereby assisting the impulse by the weight of the whole body. This exercise strengthens the body and magnificently develops the limb by which the discus is thrown.

It is usefully employed when it is desirable to remedy weakness in either of the arms, or to bring up the power of the left arm to that of the right.

67. The discus may be heaved from above the shoulder as well as flung from below.

For the acquirement of power, this exercise is admirably adapted, and ought to be much practiced with both hands.

Dumb Bells.

68. Nearly all the arm, leg and trunk exercises may be performed carrying dumb bells. They should be done in cadence and the movements gradually accelerated. For practice, the section should be formed in open order, or in a circle, at double arms length, the dumb-bells weighing from 4 to 6 pounds. The arms should be raised and lowered in all directions, first slowly and steadily, then with a swing, and from either the fundamental position or standing astride. The following is a good preliminary exercise:

Raise the dumb-bells well above the head, and longe forward; while at the longe, stoop down and touch the ground with the dumb-bells, raise them again over the head, still remaining at the longe, and assume the first position.

69. *Thrusting* should be done in all directions, while the

dumb-bells are held in various positions and in combination with the leg and trunk exercises. When thrusting, the elbows should be close to the side, the dumb-bells close to the shoulders, with the kuckles front and thumb uppermost.

Thrusting upwards and downwards, while sinking, rising and squatting on the heels, is a wholesome exercise.

70. *Striking* with the dumb-bell may be done downwards, upwards and in a horizontal direction to the left and right. One of the most effective of these exercises is striking upwards and downwards with both arms simultaneously or striking upwards with one and downwards with the other.

The dumb-bell exercises with locomotion may be done with excellent results.

Bar-Bells.

71. The *wand* and bar-bell exercises may be practiced by the section together, in the same manner as the dumb-bell exercises. The members fall in "at order," at double distance apart. Weak persons should use the wand at first, then pass to wooden bar-bells, and finally to the iron bar-bells weighing from 20 to 100 pounds.

For preliminary exercises, take the wand or bar-bells with ordinary or reversed grasp. By varying the distance between the hands, the difficulty attending the performance of the exercises is increased or diminished. Raise it to a horizontal position in front of the body, without bending the arms, to a horizontal position above the head and finally sidewards to the left and right in alternation, the feet remaining stationary. The exercise is rendered difficult by reversing the wand, or bar-bells, from time to time.

72. Starting from the position, the bar horizontal above the head, lower the bar to either side, keeping the arms straight. Again raise the bar and lower it to the other side ; repeat this in rapid succession. The exercise is varied by passing from the first position to the

astride whilst raising and lowering the bars, and by longing out in different directions.

73. To exercise in stepping over the wand or bar, lower it horizontally in front of the body, step over forwards with the left or right leg and step back again ; then step over forwards with the left and right leg in succession, and step back again ; similarly and finally step over forwards and bring the bar back to the front by passing it over the head. The exercise terminates in jumping over the bar, forwards and backwards.

74. Passing beneath the wand or bar, one end resting upon the ground, is a good exercise. The nearer the hands to the ground the greater the difficulty. The exercise is varied by holding the bar with one hand only.

75. *Thrusting* is done upwards, downwards and sidewards, and should be often combined with longing. The thrust upwards, gliding the bar (perfectly vertical) through one hand, accompanied by a longe sidewards, is an excellent exercise.

76. The wand or bar may be raised over the head to the rear, in a variety of ways. It is, at first, passed to the shoulders, then to the back with arms bent, and finally with arms straight. The farther separated the hands the easier the exercise.

Longing and many of the free exercises for the trunk and legs, in combination with these exercises, are very attractive.

77. A wand about 12 or 15 feet long may be used by a great many for co-operative exercises.

The men using the wand fall in one behind the other, or side by side, having the wand in front, to the rear or on one of the sides. They then raise and lower it sidewards, pass it over the head to the other side, step over it and longe sidewards, at the same time raising the wand. The long wand may be used as a horizon-

tal bar, the odd numbers holding while the even numbers practice. For instance, the men having faced to the left, the odd numbers place the wand upon their shoulders, while the even numbers circle, hang by the arms, hocks, etc. Two long wands when held above the head, placed upon the shoulders or underneath the arms, may be used in the manner of parallel bars by one-half of the men.

Indian Clubs.

78. In this exercise the body from the hips upward is called into beautiful operation. But slight muscular exertion is demanded and such as is required calls upon that portion of the system found in a state of comparative repose and in need of constant artificial practice.

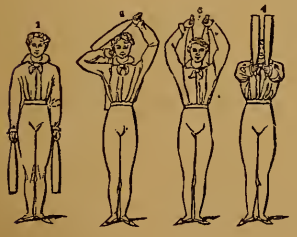
In every exercise with the clubs the right arm is made to perform the first motion, then the left, and finally both, and all the movements are executed a sufficient number of times to insure accuracy.

The course selected is from the Indian practice. But, when proficiency shall have been attained, the instructor will add other useful and attractive exercises.

79. The instructor commands :

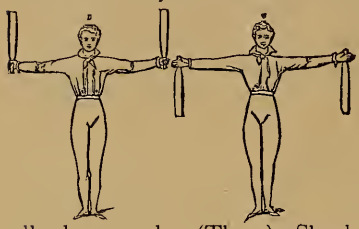
1. *First.* 2. EXERCISE.

Hold a club by the handle, pendent on each side. (Two.) Carry that in the right hand over the head and left shoulder, until it hangs perpendicularly on the right side of the spine ; carry that in the left hand over the former, in the opposite direction, until it hangs on the opposite side. (Three) Hold both clubs still pendent and raise the hands a little higher than the head; also with the clubs in the same position, extend both arms outward and backward ; then raise the clubs, bring them at arms length in front of the body and as high as the shoulders and slowly drop them into the first position.



1. *Second.* 2. EXERCISE.

80. From the first position, swing the ends of both clubs upward until they are held, vertically and side by side, at arm's length in front of the body, the hands as high as the shoulders. (Two). Carry them in the same position, at arm's length and on the same level, as far backward as possible, and drop them backward until they hang vertically downward. (Three). Slowly carry the clubs to the first position.



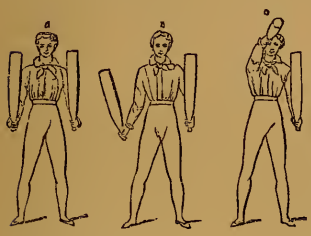
81. Previous to dropping the clubs back-ward, this exercise is improved by a turn of the wrist upward and backward, to carry the clubs into a horizontal position behind the shoulders, so that if long enough, their ends would touch, or, by a turn of the wrist outward and downward, to carry them horizontally outward; or finally, by a turn of the wrist upward and forward, to carry them into a horizontal position in front of the breast.

1. *Third.* 2. EXERCISE.

82. Hold a club forward and upright in each hand, the fore-aam horizontal and placed by the haunch on each side. (Two.) Throw them both in a circle upward and forward and, by a turn of the wrist downward and backward, so as strike under the arms. (Three). By an opposite movement, throw them both back again in a similar circle, till they swing over the shoulders. Repeat the movement as long as desirable.

1. *Fourth.* 2. EXERCISE.

83. Hold the clubs obliquely upward in each hand, resting them on the front of the arms. (Two). Allow that on the right hand to face backward and swing downward and forward to the extent of the arm and as high as the head. (Three). The moment this club begins to return from this point, in the same direction, to the front of the arm, drop that in the left hand backward, and let it perform the advancing portion of this course in the time that the other performs the returning portion, so that at the same time, each is swinging in an opposite direction.



1. *Fifth.* 2. EXERCISE.

84. From the first position, by a turn of the body and extension of the arms, throw the clubs upwards and laterally. (Two). Make, at the extent of the arms, and in front of the body, a circle in which they sweep downward by the feet and upward over the head, and fall in a more limited curve towards the side on which they began, in such a manner that the outer one may form a circle around the shoulder, and the inner one around the head, both rapidly passing through the position "three" of the *third exercise.* (Three). Return them to the first position. Repeat to the other side and continue to alternate.

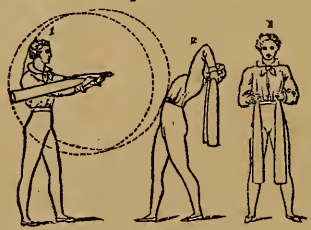
1. *Sixth.* 2. EXERCISE.

85. Being in the first positton, turn the body laterally ; for example, to the left, throw the club in the right hand upward in that

direction, the arm fully extended, and make the large circle in front and curve behind as in the fifth exercise ; the club in the left hand is caused to make at the same time a smaller circle in front of the head and behind the shoulders. (Two.) When crossing each other before and on the right side of the head, reverse their movements, causing the club in the right hand to perform the small circle around the head, while that in the left performs the large one. (Three.) Continue to repeat to each side alternately.

1. *Seventh.* 2. EXERCISE.

86. Being in the first position, turn the body to one side—the left for example—and throw out the clubs in the same direction



and cause each to make, by a turn of the wrist, a circle four times on the outer sides of the outstretched arms. (Two.) As the fourth circle is completed, throw the clubs higher to the same side, sweeping them in the large circle in front, as in the *fourth exercise*, turning the body similarly to the right ; but instead of describing the smaller curve behind, throw both over the back. (Three.) Throw the clubs in front (now towards the opposite side) and reverse the same movements, proceeding alternately to each side.

The last motion may be varied by bringing both clubs, reversed and pendent in front, the ends of their handles being upward on the thumb sides of the hands, and by a turn of the wrist returning them to the first position.

1. *Eighth.* 2. EXERCISE.

87. Holding the clubs reversed and pendent in front, describe with their ends two circles oblique to each other over the head, by

swinging the club in the right hand to that side, first elevating behind the head, then passing to the left, the front and the right behind so as to form its circle. Meantime the left hand club (commencing when that in the right hand was behind the head) has passed on the back of its circle to the right, while that in the right hand has passed on the front of its circle to the same side. (Two.) Continue them, that in the right hand by the back, and that in the left hand by the fiont toward the left side. (Three.) Repeat at pleasure, circling over the head.

The Vaulting Horse.

88. The body of the horse should be perfectly smooth, and the top and sides covered with leather, the upper portion being stuffed with horse-hair. The pommels should be moveable, and the legs provided with slides to raise the horse from 3 to 6 feet. There should be at least two of these machines in the gymnasium. Great care must be taken to avoid falls consequent on the hand slipping from the surface during the elevation of the lower limbs. Nothing so readily causes a fall as the fear of falling.

89. The instructor will first teach the methods of mounting in the saddle, both *shifting* and *lifting up* one hand. He will then explain mounting the croup and the neck, the rear-mount, the screw-mount, the shear-mount and the side-mounts forwards and backwards.

To Mount in the Saddle, shifting one hand. Place the hands upon the pommels and spring up into the rest; raise the right leg and throw it over the croup; let go with the right hand and place it on the front pommel and come down into the seat astride. Keep the legs straight, the head well up, pressing the horse between the thighs.

To dismount, change the position, throw the left leg (kept straight) backwards over the croup and at the same time move

the left hand to the back pommel. Being then in the rest on the off-side of the horse, spring to the ground.

To go into the saddle lifting up one hand. Go into the rest as before and throw over the right leg, but instead of moving the right hand, lift it up and allow the leg to pass through.

To dismount—change the hands (left hand on the back, right on front pommel) and throw the left leg over backwards. It is much easier to keep the hands as they are, and throw the right leg over forwards.

90. The *feints* to all the ways of mounting should be thoroughly practiced ; in all of them, throw the leg over, but instead of seating the body, swing the same leg back again, and return to the starting position. The *feint to the rear mount* is a difficult one for learners. Go into the rest, throw up the right leg sideways to the left, lift the left hand for a moment and allow it to pass through ; this done, refrain from dropping down into the seat, but promptly swing the right leg back again.

91. In all the balancing exercises, the hands only should touch the horse. The sections should practice the following : Go up into the rest sideways and raise the knees above the saddle, then extend them forward and finally go back to the rest sideways (without touching the feet) and stand on the hands. At first the arms may be slightly bent and the body slowly raised, but after some practice, the arms should be kept straight. Assistance may be rendered from the off-side if necessary.

92. *Threading the needle* is an attractive exercise in balancing. Go into the rest and throw the right leg over the croup, passing it between the arms, the hands grasping the back and front pommels. Holding on by the hands, turn the body and go into the seat astride, looking towards the croup.

93. To make a lever on both elbows, the hands are made to grasp the back pommel, reversed, while the elbows are securely

placed against the loins, and the legs raised until horizontal.

As a variation, the lever can be done without the elbows affording support, mainly by the force of the arms. The lever upon one elbow, with the other arm extended horizontally is very difficult, but is easy as an early practice while the other hand supports the balance, by being placed on the front pommel. When in the lever upon one elbow, spin around in a horizontal plane, to the right and left, if possible.

94. A useful exercise may be practiced by changing the seat into the saddle when sitting astride on the croup of the horse.

Grasp the back-pommel with both hands, the right reversed; throw the legs upwards and backwards and lock them (position A); swing both legs well forwards on the off-side of the horse, keeping them open, and throw the left leg over the saddle; finally place both hands on the front pommel and rest in position B. The seat may be similarly changed to the neck and then back to the saddle and croup.

95. *The Vaultings* should be practiced with great care, first

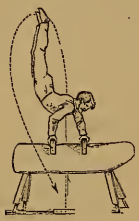
with a run, then from a standing position and finally from the rest. In the *flank vault*, the horse is cleared without turning to either the right or left, the gymnast landing on the other side, back to the horse. This vault can be done backwards, from the rest side-ways, the horse behind.

96. In the *front vault*, the face is turned towards the horse the legs are locked and swung well up to a horizontal position,

both hands grasping the pommels. This vault is much easier if the back pommel be grasped with the left hand and the right hand placed on the croup. Generally the gymnast will land at 1, with the left hand on the front pommel, and the left side towards the horse.

As a matter of practice, the landing may be made at II. (springing down backwards), or at III. (springing down forwards).

The front vault from a standing position or from the rest is similarly executed. The exercise may be varied by facing to the left or right, and it is well to employ the assistance of a comrade in the earlier practice.



97. The front vault is also done by rising very high, until into position standing upon the hands. The sections should be taught to do the front vault into the rest on the off-side, with the horse in front, also the front vault over the neck to the starting position.

It can also be done into the rest on the off-side of the horse, changing the position of the hands.

98. To do the *rear vault* over the saddle, turn the back towards the horse, and come down on the off-side, turning the left side towards the horse, and placing the left hand upon the front pommel. It can be done also over the neck and croup, and from the standing position or the rest.

99. Before practicing the *straddle vault,* the gymnast is taught to go into the straddling position on the horse, with his feet close outside the pommels; then, the same with the legs perfectly straight.

The straddle vault, with the knees both bent and straight, should be practiced, first with a run, and then from the standing position or the rest. Instead of going at once to the ground, the gymnast can go into the rest on the off-side, with the horse behind. Careful assistance should be rendered when necessary. This exercise may be varied by trying the "wolf vault," where only one leg is straddling, the other squatting, and this should, at first, be practiced over the neck or croup.

100. *The Somerset* should at first be practiced from the rest, then from a standing position and finally with

a run, with the arms first bent and then straight. At first a comrade should assist the body while turning downwards.

101. To perform the *Roll-over-backwards*, go up into the rest, with the horse behind, drop down backwards and firmly grasp the pommels with both hands; raise the legs and turn over backwards, straightening the arms until the head can clear the horse, and finally drop in a standing position, the horse in front. The *vaults* should be practiced, making use of one hand only. When the left hand is used, spring off with the left foot, and when the right hand is used, spring off with the right foot.

102. Previous to practicing the free leap over the horse, the gymnast should try leaping on the saddle and springing off with one foot. Then let him leap clear over the horse, but put his hands on the pommels and push himself off after he has cleared it. He should then practice the *squatting leap* and *straddle leap*, without touching the horse at all.

103. To perform the *tiger leap*, spring well off the ground and leap over the horse, head foremost, the arms extended. After clearing the horse endeavor to come to the ground, feet down.

In the first practice of this daring feat, the leaper should receive some support from a comrade as he comes down, should he find trouble in gaining his feet.

104. The exercises from the croup are performed similarly to those from the side, and are no more difficult for expert gymnasts, who can readily clear the pommels.

The Vault into the rest is done both from a standing position and with a run, the same as from the side, except that the hands are placed upon the croup instead of grasping the pommels.

To swing off backwards, go up into the rest and swing off back-

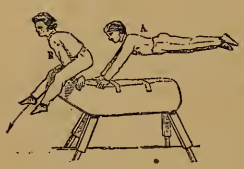
wards, slightly bending the arms and pushing off with the legs.

This exercise may be varied by swinging off from the back pommel, the front pommel and even the neck.

105. *The feints from the croup* are similar in character to those with a run from the side. To execute the feint to the front mount, go into the balance rest A, and immediately leave the horse by throwing over one leg backwards or forwards (B), and avoid sitting down on the horse.

106. The last exercise is one of a great number where the instructor has an opportunity to add on other useful exercises to any desired extent. For instance, having made the feint-mount over the neck (A), the gymnast can swing off backwards (B), or having feinted over the neck, he can circle with the left leg forwards, etc.

107. *The rear vault with one leg* is an excellent exercise in vaulting from the croup. To perform it, run towards the croup and place the right hand on the back-pommel, the left on the croup ; raise the body and throw the right leg over the horse forwards, and without sitting down, lift in succession the right and left hand to allow it to pass ; spring down on the near or left side of the horse, with the right hand placed on the croup, or, better, on the back-pom mel.



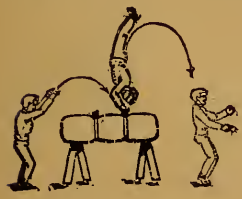
108. The *giant* vaults over the croup must be done with great caution. Three or four men should be in readiness to catch the gymnast in case of mishap. In practicing the ordinary giant vault, the body may be either supported upon the croup and neck of the horse in quick succession, or upon the neck and saddle alone.

As these vaults are over the entire length of the horse, they become difficult as the length increases.

109. To perform the *somerset* from a standing position on the horse, go down upon the hands well up on the neck, then slowly raise the body until standing on the hands, and turn over, landing on the feet, the horse behind.

The exercise may be varied by performing the "bear's somerset," where the body is supported on one shoulder while turning over. The start is made from the seat in the saddle and the front pommel is held with reversed grasp.

110. To make the somerset from the balance rest, vault into the balance rest on the front pommel and slowly raise the body until standing upon the hands; then turn over and land on the feet, the horse behind. Men should stand on each side, at first, to assist.



Vaulting Table.

111. The *Vaulting Table* should be made very strong, and capable of being raised or lowered and provided with an elastic board. It is very useful in the gymnasium, its exercises being similar to those of the horse, but capable of being made more difficult and well suited for the final practice.

The Horizontal Bar.

112. These exercises are very valuable, and should be executed by the entire class or section at the same time, all obeying the same word of command.

The bar should be made of tough wood or wrought iron about $1\frac{1}{2}$ inches in diameter, and ordinarily at a height of 8 feet from the floor. It should be not less than 20 feet in length. In the first exercises the bar may be placed at the height of the shoulders,

in order that the instructor may be able to render the necessary assistance while teaching the most difficult positions and movements.

113. The instructor will first explain the different *grasps.*

In the ordinary grasp the knuckles are in front ; in the reversed grasp they are behind ; in the double grasp, one hand has the ordinary the other the reversed grasp ; and in the twisted grasp the arms are turned around, throwing the thumbs on the outside. The hands are habitually apart a distance equal to the width of the shoulders. Excellent preliminary exercises are practised in changing the grasp while performing the turnings and facings. For example, hang sideways with double grasp (*a*); let go the right hand, turn to the left about and grasp the bar with the right hand in the ordinary grasp (*b*), hanging sideways on the opposite side or the bar.

Hanging sideways, bar in front, the gymnast can turn to the left or right about, and again grasp the bar on the same side, so as to hang sideways, bar behind. By changing the grasp with both hands at once and introducing twisted grasps, these exercises may be rendered very difficult.

114. *Swinging* should be frequently practised and with caution. Hanging sideways, the body is set in motion by slightly bending the arms and raising the legs. In the first practice, the swing should be limited to 45°.

Retain a firm hold of the bar, jump to the ground just as the legs are about to swing forwards, and come down upon the balls of the feet, the knees yielding slightly. Only after much practice should the attempt be made to swing off the bar either with the backward or forward swing. When this is done the back should be well bent. After practice, as varying exercises, the hands may be momentarily lifted off the bar with the backward swing and clapped or even struck against the legs ; also while swinging, the grasp may be changed first hand after hand, then both hands together, and during either the forward or backward swing.

115. The up-rise is an excellent mode of going into the rest, and should be done without any pause, and either quickly with a jerk or slowly with a steady pull. Its difficulty is increased by grasping reversed, while an advantage is gained by merely bending the wrists over the bar. The up-rise, grasping with one hand only, is very difficult. As a variation the gymnast may practice going into the rest without bending the arms, by bending the back and throwing the chest forward while hanging.

116. The *up-swing* is a rise into the rest with the aid of a swing. The gymnast, hanging sideways, swings forwards and backwards, bending the arms, and raises himself into the rest with the backward swing. The practice is more difficult if the arms are kept straight. The *up-swing* is easiest with reversed or double grasp, and the most difficult with the ordinary grasp.

It is important to keep the arms bent at first.

The instructor may follow the exercise by the *up-rise*, bar behind; the *up-start*, or any other suitable rising, and may have the exercises performed several times in succession, by having the gymnast sink down to a hanging position after each rise, with or without a swing.

117. The section should be carefully taught to go into the rest upon the bar, by turning head over heels over the bar as an axis. To circle the bar, take position in front of it, fixed at the height of the shoulders; grasp it with both hands (reversed grasp is the easiest), spring off the ground, throw up the legs forwards and at the same time bend the arms and turn over, pulling the body up into the rest on the bar. At first, it may be permitted to bend the legs.

The bar may also be circled, by starting from a hanging position. Swing moderately, bend the arms with the backward swing, throw up the legs, and circle the bar with the forward swing. This exercise is rendered more difficult by omitting the swing and not bending the arms.

118. *To Circle and Over-Swing.*—At first, start from a standing position, the bar at the height of the shoulders; grasp the bar and spring off the ground; bend the arms and swing round and over the bar, without touching it with the body, and come again into the standing position.

Gradually the height of the bar above the ground should be increased to 8 feet. After some practice in clearing the bar, the gymnast should push off it backwards, landing at a greater or lesser distance from it.

These exercises may be finally attempted, grasping with one hand only, the disengaged hand grasping the wrist of the other.

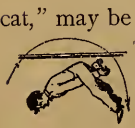
119. *The back-circle* is most readily done with the ordinary grasp, but is quite difficult with the reversed grasp. To perform it, take position sideways to the bar, the back turned towards it; raise the arms backwards, grasp the bar and hang as with the arms extended. Bring up the legs backwards until they touch the bar, and by a strong effort of the arms raise the body and turn over it, so as to get into the rest, with the bar behind.

The exercise should be done both with a steady pull and with the aid of a swing, and should be practiced until the gymnast is able to swing himself over the bar, without touching it with the body, so as to come to the standing position.

120. To perform the *back circle outside the hands*, take the double grasp, and raise the body over the bar outside the hands (placed touching each other), at first passing to the right and then to the left of them.

Variations may be done by facing to the right or left about while circling.

121. *The turn over, passing legs between arms*, or "skin-the-cat," may be done steadily or with a swing, and either from the stand or from a hanging position. The legs are thrown up without being crossed, and the turn continued until the gymnast hangs sideways, bar behind. The same exercise may be rendered more difficult by



hanging or standing crossways at the start. It is the most attractive when the legs are straddled and after three quarter turns have been accomplished, with the aid of a strong spring and swing, the hands are made to yield their grasp, and the gymnast finds himself on his feet.

122. The section should be taught to hang sideways, by the fore arms and the upper arms, bar in front. Hanging by one arm and with the bar behind will then readily follow. The instructor should also introduce swinging whilst hanging by the arms, traveling along the bar, and changes between the various ways of hanging. All these are excellent exercises.

123. *The arm-circle, bar behind,* is rather easy forwards, but more difficult backwards. The arms should close firmly round the bar in order to make the friction less painful. Standing from the rest, the bar behind, raise the legs forwards, drop down on the arms and circle round with all the impetus obtainable. The exercise may be rendered more and more difficult by extending one or both arms sidewards.

124. The arm-circles backwards and forwards are likewise valuable exercises. Much practice is essential to the proper performance of the latter. It is best, at first, to rest the stomach on the bar. The gymnast should pass his arms over and underneath the bar and throw the legs upwards and backwards, until he is in a vertical position, resting on the fore-arms.

125. The gymnast may hang sideways by both legs and one or both hands in several ways: the knees between the hands, the hands between the legs, the hands on the same side of the legs, and with one hand between the legs, the other outside. While hanging in any of these positions, he may by means of a lively upswing raise himself into a sitting position (C) upon the bar.

126. Good twirling exercises may be practiced, when hanging sideways by one leg, the hand or hands grasping the shin

There is little or no danger, but to avoid pain, the arms should firmly enclose the bar. After swinging up into a sitting position, the twirl backwards or forwards is readily made. When one hand only grasps the shin, the other grasps the bar while making the twirl. The more difficult exercises in twirling, when hanging sideways by both legs, the hands grasping the shins, should follow.

127. *Mills* are swings round the bar, while the gymnast is astride with straight legs, and holds to the bar with one or both hands only. In the *mill forwards or backwards*, he sits astride the bar, sideways. Going round forwards he takes reversed grasp, going round backwards the ordinary grasp. The impetus is given by opening and closing the legs, and the arms keep him close to the bar. Neither the legs nor the body should be bent.

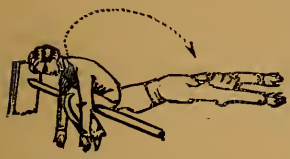
To swing up into position on the bar, peculiar to the mill, hang sideways by the bar, ordinary grasp ; swing both legs up forwards, and with the backward swing, pass the right leg between the arms, extend it and pull the body up to the bar by bending the arms, and swing into the seat upon it. After sufficient practice, the mill both backwards and forwards should be done without the fork of the legs touching the bar.

128. In hanging by the hocks, care must be taken to prevent a rush of blood to the head. There is little difficulty experienced in hanging by both or even one hock.

In the *hock-swing off the bar*, the gymnast swings, until nearly in a horizontal position, when he lets go with the legs and jumps to the ground. The arms are extended forward and aid in giving the swing. The gymnast also swings himself off, hanging by one hock. A daring exercise is the hock-swing off the bar from a sitting posture.

At first, the gymnast should drop from the seat sideways so as to hang by the hocks, and then swing off, but finally he passes from the hanging to a standing position, simply by a quick

129. The *Hock-Circle* is an exercise still more difficult and must be practised with care. The gymnast sits upon the bar sideways and doubles up, extending the arms forward or downwards, and then throws himself backward with life, straightening his body and revolving with the swing until he is again in the seat. At the end of the revolution, it is a pleasant variation for him to face about and go into the rest upon the bar. The same exercise may be performed hanging by one hock, both forwards and backwards.



130. *The lever, hanging by one hock*, may be done hanging either sideways or crossways. In the latter the gymnast keeps his balance by placing the left foot or toe against the bar, and in this position, he can sink and rise by bending the back. It is a good exercise to change the lever from one hock to the other, while in position.

131. The instructor should practice a variety of exercises embracing sitting, lying, kneeling and standing upon the bar. When seated upon it, the gymnast should travel along it, first by using the hands, then by means of jumps and the feet alone. Changing the seat gives a great variety of useful exercises. When sitting upon the bar, whether holding on with the hands or not, change over first one leg then the other, and finally both at once. A variety of movements may be ordered from any of the positions.

132. The horizontal bar may be used for many exercises described for the vaulting horse.

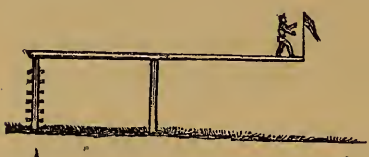
Mounting is done in the same way as at the horse, but it is more difficult and must be done with caution.

The *feints, circles, exercises in the balance rest, changes of seat*, etc., are easier than on the horse, the hands having a surer grasp. *The somerset* may be practised to great advantage over the bar. Spring up into the rest sideways, arch the back and turn over. The grasp can be kept until the ground is touched. Af-

ter sufficient practice, the gymnast may swing off forwards and come down on his feet, well to the front.

The Balancing Beam.

133. Before proceeding farther in exercises similar to those of the bar, it will be well to pay particular attention to balancing exercises.

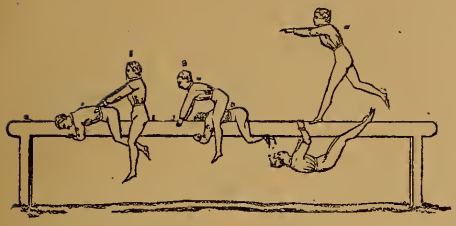


The Balancing Beam consists of a tapering spar, 30 or 40 feet long, 10 inches in diameter at one end and 5 inches at the other, resting upon two supports, so as to allow one end to waver.

The first exercises to be practised on the beam are mounting it, sitting astride upon it, kneeling, squatting, raising the body upright, changing between sitting and standing and walking forwards, backwards and sidewards. In walking forwards or backwards, the feet are turned outwards; when walking sidewards, the leading foot is placed lengthwise on the beam, the other across.

134. A and B meeting on the beam, pass each other by placing the inner edges of their right feet against each other (feet turned outwards) and grasping each other round the waist, or by the upper arms. At the command, *Ready*, both twirl simultaneously on the right feet forwards and thus reverse positions. This exercise at first should be on a beam placed close to the ground. Or, two men meeting on the beam can pass when one of them sits down astride and crouches down, lies across the beam, or hangs himself below it by the hands and feet, and the other steps over him.

135. In all the passing exercises on the beam, the gymnasts who are astride and lie down on the beam, must grasp it firmly by passing their arms around it, and hold tight to it with the



arms and thighs. Those passing over lean upon the arms and raise the body forward, opening the legs widely and pass over without touching their comrades, if possible. The gymnast, when in position under the beam hanging by hands and feet, should practice raising himself up on the beam and to advance along it underneath, in a reversed position. Before leaving the beam, frequent encounters should take place, both on the thick and the wavering end.

Walking the beam carrying a burden should also be practised.

136. Small pyramids with revolving tops furnish a series of elementary balancing exercises.

Standing in the balancing position, the gymnast may spin round to the right or left by giving the impulse with the leg upon which he stands, or by swinging the other. Or, standing upon one leg, he may throw the body into a horizontal position forwards and possibly backwards, etc.

137. *The hanging plank*, about 12 feet long, 2 feet wide and suspended by four ropes, attached to hooks, about 15 feet above the ground, is an excellent machine for a variety of balancing exercises.

These should be practised with great caution, and only those gymnasts should perform on the hanging plank who have shown great proficiency at the balancing beam. They stand on the plank and walk along it with short steps, the plank being kept at first as steady as possible. Afterwards it is rocked to fro, and they master the rocking movement by bending and stretching the knees. A great variety of difficult exercises may be here introduced.

The Parallel Bars.

138. This machine consists of two fixed wooden bars parallel to each other, at a distance above the floor varying from 3 feet

8 inches to the height of the shoulders and about 20 inches (more properly the breadth of the shoulders) apart. They should be planed perfectly smooth and the tops rounded to fit the hands. Bars which can be raised and lowered offer great advantages. The exercises are varied and useful and are virtually executed by the trunk and upper limbs. The usual starting position for all the exercises, is the rest between the bars. The instructor should introduce a variety of exercises involving the *outside*, *inside* and *front* grasps; the simple movements of the body and legs, while in the different rests, and ordinary *traveling*, *walking* (moving hand after hand), *hopping* (moving both hands at once), *waltzing* (continually turning round) and *gliding along*, while in the rest upon the fore arms.

139. *Swinging* is one of the most valuable exercises at the bars, if done properly. It should be practiced, at first, in the rest with straight arms and then in the drop rest. At first the gymnast should swing only as high as the bars, then gradually increase the swing until he can stand head downmost upon the hands. The swinging may be varied by introducing various leg movements. In the *grasshopper swings*, the gymnast alternates between the rest with straight arms and the drop rest. Starting from the drop rest, or from the rest with straight arms, he can sink (or rise) with the forward swing, the backward swing, or with both. The *grasshopper jumps* are done traveling along the bars either forwards or backwards. Starting from the rest with arms straight, swing the legs up behind and sink into the drop rest as they descend; then hop forwards and go up into the rest with straight arms as the legs rise in front, etc.

To travel with the backwards swing, commence to sink into the drop rest while the legs are up in front.

140. *Swinging in the rest upon the forearms* should be practiced until the gymnast can raise the body to a vertical position (standing upon the forearms), the back well bent. He can raise from the rest on the forearms to the drop rest, with the backward swing, the forward swing, or with both, and can hop along the bars

forwards or backwards. He can also *glide along the bars* in the rest upon the forearms, either forwards or backwards, with the forward swing or the backward swing.

141. *To stand head downmost upon a shoulder*, kneel upon the bars, place a shoulder upon the bar, close to the hand, head inside, and raise the body into the head-downmost position. After some practice the gymnast can go into this position from the rest. By changing from one bar to the other, he can shift the weight from one shoulder to the other. Being in position A, a good exercise is afforded in passing into the balance rest on one shoulder, B. In this connection the instructor should introduce exercises involving the standing on the head, the neck, and the hands.

142. The *circles* at the bars are very similar to those at the horse, and may be done with one or both legs. The circles forwards and backwards with one leg, and the circles with both legs over one bar forwards and backwards, are good and simple exercises.

To circle with both legs over both bars forwards, go well up into the rest in the middle of the bars and throw both legs over the right bar behind and near the right hand (position A); with a good swing clear in succession the left and right bars, for the moment lifting up the hands to allow the legs to pass (position B) and go back into the rest.

To make the circle with both legs over both bars, *backwards*, start when sitting in front of the right or the left hand.

143. In the seat within the bars, the gymnast sits squarely upon both thighs, his face turned inwards.

The change may be accompanied by traveling along the bar. Place yourself at the end of the bars, grasp them, the right hand in advance, spring up and sit on the right bar.

Jump down, advance the left hand along the bar, and spring into the seat on the left bar. This may be done traveling backwards, and together with the change of seat, may be effected

without intermediate jumping to the ground. The instructor should also practice the change of seat, throwing over one leg in its many variations, and the changes of seat with both legs locked.

144. When *sitting astride on both bars*, the legs may be in front of or behind the hands. A change from one position to the other, with the hands stationary, may be done with the grasshopper swing.

By continuing to change from the rear to the front, and placing the hands in front again after each change, the bars may be traveled forwards. The traveling may also be done backwards and with the arms straight, or by short hops, the hands resting on the hips.

145. To perform the *shears backwards*, go up into the rest in the middle of the bars and swing lively. When the legs are well

up behind, cross them and face to the left or right ; at the same time throw the left leg over the right bar and the right leg over the left bar. Shift the position of the hands and complete the half face, so as to sit with legs astride on both bars in front of the hands, ready to repeat the exercise. As a variation the shears may be done with the grasshopper swing.

In the *shears forward*, the legs are crossed with the forward swing.

146. The *Hammock* is a good exercise. To perform it, take position within the bars, and grasp them with the hands outside ;

turn over backwards, but instead of allowing the legs to descend between the bars place the insteps upon them. The instructor should allow the stomach to be supported at first.

147. The *front and back levers*, hanging by the arms, are also valuable exercises. To make the front lever place the arms for-

wards along the bars and grasp them, then raise the legs forwards until the body is horizontal. The back lever, hanging by the arms, is similar, but the arms are extended backwards along the bars and the legs are raised backwards.

148. An excellent exercise for the back and stomach, is *hanging down by the legs, outside the bars.* To do it backwards, sit inside on one of the bars, place the insteps beneath the bar opposite, fold the arms and lean backwards, until the body is horizontal. Return to the sitting position and continue to rise and sink. The exercise is rendered more difficult by sinking beneath the horizontal, and from this position rising to the horizontal on the seat, carrying a weight, either bending the back or keeping it stiff.

A similar exercise may be done forwards.

149. *Hanging by the thighs* is a capital exercise. Open well the legs (straddle) and press the thighs against the bars while hanging head downmost. This practice should finally terminate in *plunging.* Being in the seat on the bars (position A), raise the hands and plunge the body forwards (B) with life. After practice, the gymnast should plunge and come back to the starting position. The turn over may also be done backwards.

150. The instructor should practice all the "rolls," or the turns heels over head, both forwards and backwards starting either from a sitting position, from the rest, from hanging by the arms, or from the drop rest. They should finally be done repeatedly in succession and in the same direction along the bars. The *roll forwards* is as follows: Sit astride and stoop down forwards (position A), then turning over quickly come into the position B, and finally rise again into the sitting position and repeat the roll. The *roll backwards* is more difficult: sitting astride as before, the bars are grasped behind, and rocking to and fro the body is suddenly thrown backwards, the arms being spread out and the legs kept astraddle while turning over.

151. The bars offer excellent facilities for practicing the exercises of the vaulting horse. The vaults may be made from the

end of the bars or from the side, either from the rest or a standing position, with or without a run.

The *circles with one leg* are done at first from a standing position to a standing position, and then from a standing position to the rest; also inwards (from outside to inside), or outwards (from inside to outside). Taking position A, at the end of the bars, place the hands upon them and spring off the ground, swinging the left leg forwards between the bars and over the left bar, momentarily lifting up the left hand to allow the leg to pass and jump to the ground, or remain in the rest. The circle inwards with one leg is similar.

The *circles with both legs* are done by passing both legs over the bar, keeping them locked.

152. *The straddle off forwards* is done over one or both bars. Go up into the rest at the end of the bars, facing outwards, swing the legs over the left or right bar or over both, let go the hands and jump to the ground. The instructor lends assistance from the front, should the legs hang to the bars. It is necessary for the gymnast to be very resolute.

The *straddle off backwards* is done from the rest at the end of the bars, the face turned inwards.

153. *The straddle outwards* is first done to the seat. Grasp the bars, swing the legs up forwards, open them when above the bars, and sit down astraddle; momentarily lift up the hands to allow the legs to pass (B) and return to the standing position (A).

The *straddle inwards* from the end of the bars is simple. Jump up and straddle the legs, lift up the hands to allow them to pass and sit down astraddle on both bars. The same should be done to the rest and with the back to the standing position.

154. The vaults from the sides over both bars, such as the *front-sault*, the *rear-sault*, the *flank-sault*, the *squating-sault* and

the *straddle-sault,* are the same as at the horse, but must be practised with much caution. The instructor should insure variety by causing both hands to grasp the near bar (ordinary grasp) or to have one hand grasp the near bar (reversed), and the other the off-bar.

The squatting-vault should at first be limited to vaulting into the seat on the near bar, then squatting over the off-bar, and finally over both bars, both hands grasping the near bar. Both the straddle vault and somerset are difficult at first, and should be practised by degrees.

155. *The shoot over* is an excellent exercise, but must be done with care. Grasping the near bar with both hands, shoot over the off bar and land on the feet. The arms should be bent and the off bar should not be touched with the body. In the early practice, however, the gymnasts will be permitted to push themselves over. The instructor can further introduce a variety of exercises by having four parallel bars, at the same or at different heights. Also, by transfering the exercises to *hanging parallel bars,* where the difficulty is increased in consequence of the oscillating motion.

The Trapezium.

156. This machine consists of a turned ash bar about $1\frac{1}{4}$ inches in diameter, suspended by a rope at each end from the ceiling or a cross beam. The bar should be not less than $4\frac{1}{2}$ feet from the floor, and an arrangement for raising and lowering it is very desirable. The trapezium may be advantageously used for many of the exercises done on the horizontal bar. The instructor should at first practice the sections in the modes of going into the seat (analagous to those on the horizontal bar), one or both hands grasping the bar alone, or, one or both of the ropes, above the bar.

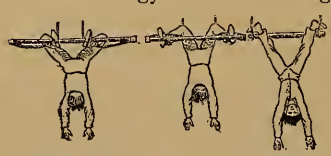
157. *To change the seat, passing outside the rope.* Being seated upon the bar, grasp the bar, the right hand close to the rope, lift the body

off the bar by means of the left hand, face to the right about and swing round the rope until again in the first position. The right arm, considerably twisted, steadies the bar.

158. *To squat over the bar.* Sitting sideways upon the bar, grasp the rope with the right hand above the head, the bar near the side with the left hand, and squat quickly over the bar backwards. This done, squat into the seat and repeat the exercise. The same can be done holding a rope with each hand, or holding with one hand and relaxing the hold on the bar.

159. The levers may be done in great variety. The more important ones are by the ropes, from a standing position, turning over forwards or backwards; the back lever below the bar (B), done from a lying position (A), by slowly turning over backwards, retaining a firm hold of the ropes. It is a good exercise to go back into the position (A).

160. *Hanging by the hocks* is simple when hanging by the bar alone. The gymnast can hang in various ways, making use of the ropes.



To hang with the insteps beneath the bar. Hang sideways, raise the legs forwards until the head is downmost, straddle, pass the legs round the ropes from the outside and place the insteps underneath the bar.

To hang with the insteps beneath the ropes and the soles against the bar. Hang sideways as before, pass the legs round the ropes from the inside, place the insteps beneath the ropes, the soles of the feet against the bar and hang.

To hang by the insteps, place the insteps round the ropes, close to the bar and hang. This should be done at first from a hanging position, and after practice it is required to drop down to this position backwards from the seat.

The instructor may introduce many swinging exercises, sitting, standing or hanging, and from time to time transfer many of the exercises of the rings to the hanging bar.

The sections can not be too careful and attentive, when practicing at the trapezium.

The Pair of Rings.

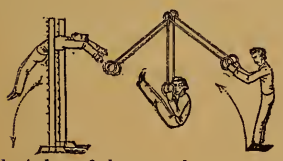
161. This machine consists of a pair of of iron rings, 5 or 6 inches in diameter, suspended by ropes 18 inches apart, and at a height from the floor, just within reach when standing on tiptoe.

The rings should be covered with buckskin leather, admit of being raised or lowered, and the ropes neatly spliced round them.

It is well to have several pairs of rings placed side by side.

The instructor should introduce a variety of exercises in hanging, with the rings stationary; hanging by the arms, straight or bent; hanging by the elbow joints, rings in front or behind; hanging by the upper arm, horizontal or hanging down; hanging by the hands with different grasps; and by the fingers 4, 3, 2 or 1.

162. The exercises of "hanging and swinging" afford an opportunity for practising feats of strength and grace of motion. At first the swing should not exceed 140°, and never should it exceed 180°.



To practice the swings and jumps to the ground, the rings should be at the height of the reach.

To swing forwards, grasp the rings; run and spring off the ground backwards, bending the arms; swing forwards, keeping the arms bent and the legs extended forwards; on coming to the end of the swing, jump to the ground, or clear a leaping stand placed in a suitable position. The swing backwards is done with a run and spring forwards previous to the swing through backwards. The hold is relaxed at the moment the swing again forwards is about to be made. *Continued swinging*, hanging clear of the ground, is best effected by raising the legs with each forward

swing, and lowering them with each backward swing, and by bending the arms with each backward and forward swing.

163. *Hanging and resting in Alternation*, while swinging, afford very useful and beautiful exercises.

The *up-start* and *up-swing* are readily done swinging. The gymnast can go up into the rest with the backward swing, with the forward swing, or with both.

164. *To perform the turn over forwards and backwards*, grasp the rings from the outside and turn over backwards into position B; then turn over forwards to the first position. At first the legs and arms may be slightly bent and the turning over done with a spring off the ground, the rings being the height of the chin; finally, both legs and arms must be kept perfectly straight. In the *swing over*, let go the rings when about half-way over and swing off backwards.

165. The *turn and cut away* must be practiced with caution. It is simplest with a spring off the ground or a short swing. The gymnast, while swinging well to the front, throws the legs over to the front and straddles the arms. He "cuts away" when commencing the backward swing. Care must be taken to guard against a fall on the head.

166. To perform the *nest*. Turn over, insert the insteps in the rings, and bend the back well. The left or right foot, left or right hand, or one foot and one hand may be disengaged. To make the *hammock*, start as for the nest, but place both insteps into one of the rings and grasp the other ring with both hands. Hang with the face downwards.

167. The *lever* is readily done with the face downwards or upwards. Care must be taken to keep both arms and legs straight. The lever sideways is done by hanging head downmost and

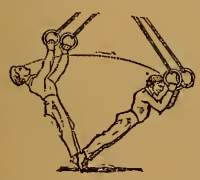
lowering the body into a horizontal—the body above the supporting arm.

168. *To turn over into the rest*, grasp both rings, turn over backwards, and gradually bending the arms, go into the drop rest. Then retrace the track or sink down until the arms are straight, and continue to repeat the exercise. The exercise is most difficult when done slowly and into the rest with straight arms.

169. The preceding and numerous other combinations of turning over and hanging, while swinging, may be readily practiced. Care must be taken that the shoulders are not injured by severe jerks or wrenches. As a general rule, the direction of the movement of parts of the body should be that of the motion of the rings.

170. There is an extensive series of exercises, performed while standing in the rings. For these, the apparatus is made more perfect by attaching to each ring a strap with stirrup, adjusted to the height of the gymnast. The exercises are varied by placing the hands at different heights between the hips and the reach.

The leaning position, hanging, done forwards and backwards (positions A and B), is a capital exercise, when the body is kept perfectly straight. Thrusting the arms out sidewards requires considerable strength, if done gracefully.



171. By lowering the rings to the height of the chest, various exercises, in which the feet are on the ground, may be practiced. A simple one is to grasp the rings and drop forwards and backwards in alternation, at first bending the arms slightly, and being careful not to shift the feet. Dropping to the left or right, sidewards, improves the exercise. After some practice, the arms should be kept perfectly straight.

172. The *funnel* is a circular movement to be done first hanging by the arms, and then hanging by the hands. The feet should remain stationary and the rings should be lowered to render the exercises more difficult.

173. *In the leaning position* the rings should be about one foot above the floor. The exercise is done with the face turned upwards or downwards, sinking and rising in the leaning position (par. 40), and extending one or both arms sidewards from either leaning position, are useful exercises.

The Cross-Beam.

174. This is a most desirable apparatus, and is used in performing many of the exercises of the bar, vaulting horse and balancing bar. It should be from 4 to 6 inches thick, at least 20 feet long and constructed in such a manner that it can be raised from 3 to twenty feet, either slanting or horizontal.

It is most advantageously used for traveling exercises, the most elementary of which are *traveling in the rest sideways*, keeping the body in an upright position, *riding over the beam sitting astride*, forwards, backwards and sidewards, (in case of giddiness, lean forwards, clasp the beam with the arms, and move along in a lying position), *traveling in the balance rest*, crossways and sidewards and *traveling forwards and backwards hanging by hands* (or arms when the beam is thick) *and legs*, the latter either locked or moving in unison with the hands.

A large rope stretched across the gymnasium can likewise be used for a great variety of excellent exercises.

The Ladder.

175. The gymnasium should be supplied with *upright, slanting* and *horizontal* ladders of wood, and with a rope ladder sus-

pended on the cross-beam. The width of the ladder between the supports should be 15 inches, and the rundles 9 inches apart. The inclination of the ladder should be frequently varied. It is well to place two ladders of the same description side by side ; one may be used for going up, the other for coming down.

176. *The upright ladder.* The gymnast may ascend, both hands grasping the beams, or rundles, or by using one hand only and carrying a burden in the disengaged hand. The step may be, *one foot leading*, *foot over foot*, or stepping over one or more rundles. Walking up the ladder, back towards it, is a very useful exercise. The hands may either grasp the beams (from the outside) at the height of the hips or head, or the rundles.

177. *Vanes.* The upright ladder is handy for accomplishing vanes of various descriptions. A simple vane, sitting upon one rundle and placing the insteps below the rundle beneath, is shown in par. 179. The foot vane is a good one for practice. Expert gymnasts can walk the ladder in this position.

178. *The parrot's ladder* has but one beam, and is either suspended on a beam or fixed top and bottom. It admits of the exercises of the upright ladder, but in addition the gymnast may go up sitting upon the rundles. The exercise is rendered more difficult by passing over one or more rundles at a time.

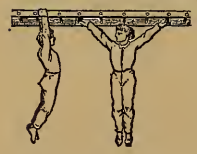
179. From the vane sitting upon a rundle, the insteps being placed beneath the rundle below, most effective exercises may be performed by sinking and rising. It is a good practice to raise the body upwards until the hands (arms extended) touch the rundles.

180. *The slanting ladder* has usually an inclination of 60°, but should be so constructed as to admit of varying the inclination. The gymnast may ascend the upper or lower side, and as a general rule, each step with the left foot is followed immediately

by an advance of the right hand ; the same rule is observed when descending. Two men are enabled to pass each other by walking up on the outside of the ladder. *Traveling in the leaning position*, face or back to the ladder, the hands grasping the beams or rundles, afford opportunities for most valuable exercises. At first, one hand leads, then hand over hand, and finally several rundles are passed at once.

181. *In the hanging position*, the gymnast can travel up and down the ladder, face or back to it, one hand leading, hand over hand, and hopping (both hands moving together). Traveling on the outside, face or back to the ladder, is one of the most effective exercises of the class, and becomes more so if the legs are held out forwards, or astraddled horizontally.

182. *The horizontal ladder* should be about 20 feet long, the beams 18 inches apart and the rundles 10 inches, and should be placed from 7 to 8 feet above the ground.



The gymnast may hang either on the rundles or on the beams ; crossways or sideways, and with the ordinary or reversed grasp. Hanging sideways, he may grasp the rundles outside (knuckles turned from him) or inside. Hanging crossways, he may grasp the beams outside or inside. A great variety of swinging and traveling exercises may be here introduced to great advantage. Also, the arm and leg exercises at the horizontal bar and the parallel bars may be here practiced with variations innumerable.

183. *Hanging by the hands and legs*, the gymnast can travel very rapidly, either forwards or backwards.

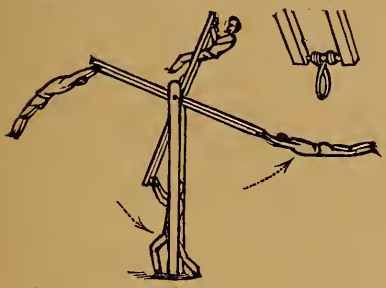
Before moving the hands, the legs should be securely fastened round the outside of the ladder.

All the exercises practiced on the wooden ladders should be transferred to the vertical, slanting and horizontal *rope ladders*,

where they will offer some little variety, and become rather more difficult.

The Double See-Saw.

This machine, introduced by Wassmannsdorff, is invaluable in the gymnasium. The drawing shows its construction and the manner of using it. The beams are on a pivot about 15 feet above the floor and at right angles. It may be used by two or four men at a time, who should be nearly of equal weight. When the sections have become proficient in hanging, swinging and turning on the rack, trapezium and rings, the instructor will introduce this machine and carefully perform some of the most daring exercises.



Climbing.

185. These are among the most important exercises, having as they do a direct practical application to the fort. All the apparatus for climbing should be found in close proximity to the ladder, and all used in turn, during the instruction. The climbing-stand should consist of two strong poles, about 15 feet high and 20 feet apart, firmly fixed in the ground and supporting a strong beam.

One pole should be about 2 1-2 inches in diameter and the other sufficiently thick to serve as a mast. To the beam should be attached the various other implements of climbing, viz: the pair of upright poles; the inclined poles; the inclined board; *plain*, *rundled* and *knotted* ropes, upright, inclined and level; and a truck. A small portion of the gymnasium wall should be prepared, one section of the wall having a series of holes cut through the boarding, 12 or 15 inches apart in width and 9 inches apart in height, another section having projecting blocks screwed on the boarding and arranged at the same distances apart as the

holes, and another section being furnished with horizontal grooves about 1 1-2 inchs wide and deep, and one foot apart.

186. The *upright pole* should be perfectly smooth and free from splinters. In climbing, nothing should touch the pole except the feet, legs, knees and hands. The gymnast grasps as high as possible with both hands, raises himself by bending the body; and drawing his legs up the pole, holds fast by them, extends the body and again grasps above with his hands. The descent is performed by sliding down with the legs, the hands scarcely touching. The exercises of the pair of uprights are approached through those of the single pole. It is the endeavor of the gymnast to keep the body in perfect position between the poles by the hand-grasp alone.

The "Wandering Exercises," when there are many paralelled poles, are useful and interesting.

187. When the poles are inclined and about 14 inches apart, the exercises are excellent for both the upper and lower extremities.

The exercises are unlimited in variety, in fact all those of the ordinary parallel bars may be transferred to the pair of standing poles. The steeper the slope, the more difficult are the exercises. Lying on the top of the poles, the gymnast can travel up and down, the main effort being made by the arms. Traveling up and down in the ordinary rest, the drop rest and in the leaning position are all handy exercises.

188. The sections should be practised at the rundled and knotted ropes, before proceeding to the smooth rope. Ropes of different thickness should be provided in the gymnasium, and should hang (some near the prepared wall) from 16 to 20 inches apart.

The ordinary position for climbing is the same as at the pole.

The sailor's position is a good one to practice. The rope passes behind the right leg and is held behind the right instep and the sole of the left foot. This is an excellent position for coming down a rope, but is of little value for climbing up.

189. *Ordinary climbing*, using hands and legs, is done in both positions in the same way as the pole ; one hand leading, hand over hand and both hands moving together. It is necessary to bring the knees up close to the hands, when the feet have temporarily given up their hold. Climbing using the hands only and with the head downwards is done in the same manner as at the pole.

190. *The inclined board* should be rather rough, about 15 inches broad and 2 inches thick. To climb it, seize both sides with the hands, and place the feet flat in the middle. The inclination of the board should be diminished with the progress of the sections. When the board is but slightly inclined and nearly vertical, the body should be curved inward, and the legs thrust up, the higher one being nearly even with the hand. On descending small and quick steps must be taken. The board may be ascended by inserting a spike into holes made at intervals of a few inches, drawing up the body, and allowing but one foot to touch it.

191. *Climbing the mast* requires a much greater effort than the other climbing exercises, inasmuch as the hands are not able to grasp it. The position of the legs is the same as for the pole ; but, instead of grasping the mast, the climber lays hold of his left arm with his right hand (or *vice-versa*) and clings to the mast with the whole body. A peculiar way of ascending a mast or tree, is to pass a stiff and strong rope completely round the back, and *walk up*, as it were. A hoop may be advantageously substituted for the rope.

192. *The truck exercises*, and especially when the truck is placed on inclined poles or ropes, are both useful and wholesome for strengthening the loins and abdominal region. The gymnast lies on the truck on his stomach or on his back, or he may sit upon it astride with his legs between or outside the

poles. He then works himself along the poles or ropes, which he grasps, or propels himself with the aid of a rope, made fast to the wall or cross-beam. A rope, *b*, passed round the neck will prevent the truck from slipping away from the climber.

193. A real wall of rough stones, with fissures sufficiently large to insert the fingers and toes, is better for practice than the prepared wall. By securely attaching a rope to the top of the wall, the gymnast, by holding the rope with his hands, may walk up the wall, as in the case of the mast. The instructor should first practice all the modes of ascending, using the hands and feet, and finally use the hands only. The right hand and right foot leading is the simplest practice.

The Fort.

194. At the fort, the culminating exercises of climbing find an application in a manner closely resembling the actual requirements of the profession. Every part of the structure is prepared for practical use and made to support some form of apparatus, fixed or suspended, vertical or inclined, simple or compound.

The wall of the fort should be made of masonry, not less than 15 inches thick and 42 feet long, the front being boarded and divided into spaces 3 feet wide and alternately 18 and 20 feet high. Each of these spaces should be provided with some form of apparatus, simple or compound, that will assist in climbing. A lean-to shed may be formed on the back of the wall. This will serve as an abutment, a means of descent for the climbers, and a cover in inclement weather for movable outdoor apparatus.

In the first practice, the instructor will designate each man's machine and the mode of ascent; later, each man will select his mode of ascent, the machine only being designated, and finally the assault will be given from a distance, and the favorite

machine will be won by speed. Several spaces of the wall will be devoted to the formation of pyramids on foot and horseback. The last exercises on each apparatus in escalading should be performed bearing arms and carrying burdens of various kinds. The fort may also be advantageously faced by a course of prepared obstacles, ditches, walls, palisades, etc., so that it will require the highest physical efforts of speed, strength, agility and endurance to mount it.

PART II.

SWIMMING.

SWIMMING EXERCISES.

1. Swimming, as a useful and gymnastic exercise, is worthy of the careful attention of all.

Constant practice in the different modes of using the body and limbs, will give the swimmer great confidence, and develop all the muscles. It is worthy of remark that fear alone never prevents a man swimming, but is often an obstacle to the learning.

2. The practice should usually take place in the bathing hall (and invariably when raining), but may from time to time be transferred to running waters, if practicable, when various feats in sportive swimming may be practiced.

As far as possible, the swimmer should make sure of the bottom, which is best when of gravel or small stones, and free from mud, holes, snags or weeds. When bathing in the hall, the instructor will enforce all the bathing regulations, regarding the use or apparatus, the allotment of space, etc.

3. Suitable hours (preferably in the morning before breakfast) during the months of June, July and August, will be appointed for the bathing parades. Coryza is frequently the consequence of evening bathing, when the hair is not perfectly dry before sleeping.

In all practice, when exposed to the heat of the sun, the head should be kept cool by wetting the hair, or in case of its thinness, by applying a frequently wetted handkerchie

Practice should never take place before digestion is finished, nor when the body is in a prespiration. Those of plethoric temperament should bath at such times only as the surgeon directs.

4. The bathing costume should consist of short drawers and canvass slippers; but the sections should be occasionally re-

quired to swim in jackets and trowsers, or in the regular riding clothes.

5. On entering the water, the head should be wetted either by plunging head foremost, or by pouring water on it, in order to prevent the blood from accumulating in it, causing headache.

The learner should then advance on a clear, gradually shelving bottom, until the water reaches his breast, turn towards the place of entrance, draw in a full breath, close the lips and rest upon the water, suffering it to rise to his chin.

This is repeated, gradually immersing more and more of the head.

6. The swimmer should be taught from the first to dispense with all aids in floating—corks, bladders and lifting machines are to be avoided. When necessary, instructing as to attitude and action, the instructor may place one hand, as a support, under the learner. When the human body is immersed, one-eleventh of its weight remains above the surface in fresh water, and about one-tenth in salt water.

If the swimmer places himself upon the back and throws the head well back, so that the face is turned upwards, the water will not come over the mouth, although the face rises and sinks one inch at every inspiration and expiration.

The learner must satisfy himself as to the truth of this and learn, by practice, to confide in the power of the water to support him.

The ignorant unfortunately stretch out the arms to seize anything or nothing, and thus keep the head under the water, inasmuch as the head and arms greatly exceed one-tenth of the weight of the body.

7. After the learner has assured himself that he can float and has overcome his natural fear of the water, to become a graceful and powerful swimmer, it is only necessary for him to be drilled in the correct attitude of the body and movements of the limbs. It is proposed that these principles be taught and acquired out of the water.

Attitude.

8. No matter how perfect the learner may become in the ac-

tion, if he neglects to attain the right attitude, he will never be a good swimmer, Swimming becomes easy and delightful when the proper attention is given to the position of the head and breast and the posture of the body. The head should be thrown back, the chin elevated (lips closed), the breast set well forward, and the back hollowed and kept steady. It is important to guard against any action in the back. Many persons are addicted to raising the back when drawing in the legs, and of necessity swim with the feet too neat the surface of the water.

Action of the hands and arms.

9. In the proper position of the hands, the fingers must be kept close together, the thumbs by the edge of the fore fingers, and that the fingers may properly adhere, the hands should be made a little concave on the inside. Care must be taken not to hollow the hands sufficiently to very much diminish their size; if so, they lose some of their power in the water. The hands thus formed are placed before the breast, the wrist touching it and the fingers pointing forward, preparatory to a stroke.

10. The *elevations* of the hands must be taught next. The first elevation is formed by raising the fingers higher than the thick part of the hand by 3 or 4 inches. The second by raising the outer edge of the hand (little-finger side) 2 or 3 inches higher than the inner edge. This elevation is slightly increased as the outer stroke is performed.

The first part of the stroke is made by projecting the hands forward to their utmost extent, carefully employing the *first* elevation, in order to produce buoyancy. Care must be taken in this part of the stroke that the fingers do not break the surface of the water.

11. In the outer stroke, the *second* elevation must be employed, the first elevation being avoided, and the hands allowed to decline.

In the second elevation the hands must descend until they are as low as the hips.

12. Care must be taken that the hands fall to the level of the hips at a considerable distance from them both laterally and anteriorly.

The *bearing* of the hands in the water, and their peculiar power is owing to ther proper position.

The stroke being made, the hands are raised to the breast by a turn of the wrist, causing them to hang down, while the arms raise them up.

The action of the arms throughout should be gentle and easy.

These directions should be accurately reduced to practice and the learner should exercise one arm at a time, until each is accustomed to the action.

Action of the feet and legs.

13. Inasmuch as the legs are larger and stronger than the arms, the greater part of the power in swimming is derived from them. In practicing their action, one hand may rest on the top of a chair, while the opposite leg is exercised. When each arm and leg is separately accustomed to the action, the arm and leg of the same side may be exercised together.

The first action of the legs is to draw them in as high as possible, the knees inclining inward, and by a turn of the ankle, the soles of the feet inclining outward.

14. The feet are now to be thrown out to the full extent of the legs, and as widely from each other as possible.

It is evident that in drawing in the legs there was a loss of power, while in throwing them out there was a gain of power equal to that loss, and hence no advantage has been derived.

A gain of power must be sought by bringing down the legs briskly, until they come close together.

15. The legs and arms should perform their action alternately ; the arms descending while the legs are rising, and *vice versa.*

Thus the body is kept in one continued progressive motion, and the action of leg and arm unceasingly interchanged. The instructor may at first allow the legs and arms to move together, and gradually proceed to the alternate movement of the limbs.

16. The proper position of the hands, their elevations and the correct modes of striking both with the arms and legs, must be practiced until performed with ease and accuracy.

Strict attention must be paid to the simultaneous movements of hands and feet. For instance, remember when bringing down the left foot, to raise the left hand, by a turn of the wrist causing it to hang down, while the arm raises it.

Attitude and Action in the Water.

17. The requirements of paragraph 8 must be observed throughout when in the water. Having acquired the correct attitude,

the limbs should be exercised calmly and without hurry and trepidation. A long and steady stroke sends the body well forward in the water and is not very tiresome. A learner who could swim 100 yards by long and steady strokes, and without any great fatigue, would labor hard to accomplish 25 yards by quick strokes. It is an excellent

plan, at first, to execute all the motions of the hands and feet in a steady common time.

The learner should bear in mind that it is the function of the hands to support the head above the water rather than to propel the body through it; and to get the full benefit of the stroke when the feet are kicked out in the rear, the hands, when at *full stretch* in front, should not be parted immediately, but a delay of at least one second should be allowed in order that the head may approach the point where the hands part. By thus dwelling on each stroke and keeping good time, the swimmer will advance about ten times as far each stroke, as when he parts his hands *quickly* and makes rapid strokes.

The breath should be drawn in at the moment when the body is elevated by the hands descending towards the hips, otherwise the mouth will probably become filled with water. The breath should be expired while the body is sent forward by the action of the legs. The head is the principal regulator of the movements in water; its slightest inclination to either side operates on the body, and, if not corrected, throws the body into a horizontal posture. Any disturbance of equilibrium may be restored by a cautious movement of the head alone. The use of the legs and arms for balancing the body in the water, should be frequently practiced.

Treading Water.

18. Here the position is upright, and progression is obtained by the action of the legs alone. The arms should be folded below the breast or pressed against the hips, and the legs are employed as in front swimming, except as to time and space. They should perform their action in half the usual time; because, acting perpendicularly, each stroke would otherwise raise the swimmer too much out of the water, and he would sink too low in the interval between the strokes, were they not quickly to follow each other. The space of their action should also be about two-

thirds of the usual space, preserving the upper (stronger) and omitting the lower part of the stroke.

There is another mode of treading water, in which the thighs are separated, and the legs slightly bent, as in a half-sitting posture; here the legs are contracted alternately, and while one remains contracted, the other, less so, describes a circle. This method of swimming is particularly adapted to relieving drowning persons.

Swimming on the Back.

19. When swimming on the back, the body should rest at full length and not assume a sitting posture. Though little calculated for progression, this is the easiest of all methods, because, much of the head and neck being immersed, there is little or no power of action required for support. The proper position is attained and preserved by lying down gently upon the water, the body extended; the head kept in a true line with it, so that the back part of the head may be immersed; the hands laid on the thighs, and care taken that the knees do not rise out of the water; the head and breast being unagitated by the action of the legs.

20. After learning to swim on the back without using the hands, the instructor should show how they (working inwards) may assist the feet in propelling the body forward. While employing the legs as in front swimming, care being taken that the knees do not rise out of the water, the arms may be used in various ways, describing large or small circles.

21. In performing what is called "winging," the arms are extended until in line with each other; they are then struck down to the thighs, with the palms turned in that direction, the thumbs inclined downward to increase the buoyancy; the palms are then moved edgeways and the arms elevated as before. The legs throughout make one stroke as the arms come down and another as they rise.

22. "Finning" differs from *winging* in making the stroke of

the arms much shorter and in the same time as the stroke of the legs. The turn of the hands is the same in both methods. The

act of passing from front to back swimming, or the reverse, must be performed immediately after throwing out the feet. To turn from the front to back, the legs are raised forward and the head thrown backward, until the body approaches an upright position. To turn from the back to breast, the legs are dropped and the body thrown forward on the breast.

23. Many advocate an upright position in both front and back swimming, because of its conformity to the accustomed move-

ment of the limbs, the freedom it gives to the hands and arms, vision all around, and a much greater facility of breathing. The speed, according to this method, is no doubt diminished, but the mode of advancing conforming so closely to what is habitual on shore, the swimmer is better enabled to effect a continued exercise of it, while husbanding the strength and rendering the power of recruiting it easy.

Floating.

24. Floating is a transition from swimming on the back. To perform it, stretch out the arms as far as possible beyond the head,

while the legs are gently exercising, being careful that they do not rise above the surface ; immerse the crown of the head rather deeply and elevate the chin above the forehead ; inflate the chest while taking this position ; cease the action of the legs and place the feet together. The hands may be crossed upon the breast, or may be placed a foot or more asunder, equi-distant from the head, to preserve an equipoise and prevent rolling over. By observing these directions, the swimmer will be able to float, rising a little with every inspiration, and falling with every expiration. Should the feet descend, the loins may be hollowed, or the hands raised a little out of the water, to counterbalance the feet, the breast being the centre of buoyancy.

Side Swimming.

25. Side swimming is well suited for passing over a short distance with rapidity. It presents to the water a smaller surface than front swimming, but is much more fatiguing. The body may be turned either upon the right or left side, and the feet perform their usual motions.

When on the left side, the swimmer should strike forward with the left hand, and sideways with the right (back to the front instead of upward). The thumb side of the hand downward serves as an oar. When swimming on either side, the lower arm stretches itself out quickly, while the feet are striking ; and the upper arm strikes while the feet are impelling, the hand beginning its stroke on a level with the head. While this hand is again brought forward and the feet contracted, the lower hand is drawn towards the breast, rather to sustain than to impel. When changing from one side to the other, both attitude and action are reversed.

Quadruped Swimming.

26. The human limbs are not formed so as to act advantageously in this method, and hence very little progress can be made. The method is very good for a change in swimming a long distance. Each hand and foot is used alternately. The hands are drawn toward the chin in a compressed form, expanded and hollowed with the fingers close together. As they strikc the water the feet are drawn towards the stomach and then sent backward with a kick. The head should be set back and the breast forward.

Overhand Swimming.

27. This method is practiced by the Indians and overcomes several grave objections found in the old method, such as the exposure of a large resisting surface to the water, and the establishment of dead points, when neither of the extremities are moving. The *overhand* movement corresponds exactly with the amble of the horse.

The body is thrown more or less on its side at each stroke, and caused to twist and roll in the direction of its length, thus greatly reducing the friction experienced in forward motion. By the overhand movement, the swimmer is enabled to throw himself forward on the water, and to move his legs and arms in a plane nearly vertical (instead of horizontal), thereby increasing the length of the effective stroke, both of the legs and arms, to nearly half an ellipse. The advancing of the right and left sides of the body alternately, in a right line, contributes very much to continuity of motion. The method, although the most expeditious known, is fatiguing and can only be indulged in for short distances.

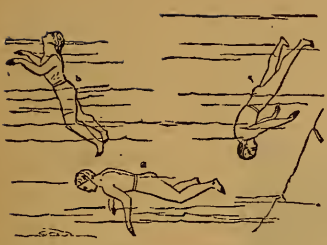
Plunging.

28. The *plunge* may be made either with the feet or the head foremost. In the leap, the legs should be kept together, and the arms close. When the plunge is made *feet foremost*, they should be kept together, and the body inclined backwards. With the head foremost, there are various methods. In the deep plunge, the swimmer has his arms outstretched, knees bent and body leant forwards until the head descends nearly to the feet, when the knees and spine are extended (Fig. 1). On rising to the surface, the mouth must not be opened before repelling the water.

In the flat plunge, made only from a small height, the swimmer should fling himself forwards in order to extend the line of the plunge as much as possible under the surface of the water. Upon touching it, he should keep his head up, back hollow, and hands stretched forward, flat and inclined upward (Fig. 2).

Diving.

29. The swimmer should prepare for diving, by taking a full and slow inspiration. The attitude for diving is the reverse of



that for swimming; instead of holding back the *head*, setting forward the *breast*, etc.; the head should be bent forward, so that the chin may rest upon the breast; the back should be made round, and the legs thrown out with great vigor; and the arms and hands, instead of being struck forward, must move rather backward, coming out lower, and passing more behind (Fig. 1). The eyes should be kept open, if the water is clear, to enable the diver to ascertain its depth, and observe whatever lies at the bottom.

To move forward, he must raise the head and slightly straighten the back (Fig. 2). If the diver approaches too near the surface of the water, he must press the palms upwards.

To ascend, the hands should be struck out high and brought briskly down, the chin held up and the back made concave (Fig. 3).

Feats in Swimming.

30. When the sections are well practiced in the usual modes of swimming the instructor should teach *one-arm swimming*. Here the instructor will see that the swimmers are more erect in the water and hold their heads further backwards than usual. The arm, at its full extent, must be struck out across the body and brought down before and the breast be kept inflated. This mode of swimming should be practiced to qualify for conveying anything out of the water, as well as for lending assistance in case of distress. It is readily seen how, by means of *one-arm swimming* or treading water, a person may transport his clothing

above water, or when under a blind, might sketch the position of the enemy's guns.

31. The sections should also be practiced in carrying weights while swimming.— The practice should continue until each member may be able to readily swim with his rifle and ammunition. The drawing shows a manner of attaching the rifle by means of a spring in the crown of the helmet or hat, so that a man swimming high may transport it in a dry condition. Only expert swimmers can perform this feat.

32. Frequent practice should also take place in connection with the swimming of stock. After fairly starting the animal, the swimmer will seize him by the tail and allow him to tow him. If the animal turns his head or endeavors to change his course, the swimmer should prevent it by splashing water in his face with the right or left hand, as the case may be.

33. If the current is not very strong, it will be found much more satisfactory to swim along with the horse, on the down stream side, holding on by the halter strap, the mane or stirrup leather. It is not a good plan to remain

in the saddle, as the animal is very apt to lose his equilibrum and roll over. This is invariably the case with the ordinary mule, and moreover should a drop of water, by accident, go into his ear, his main endeavor seems to be to sink himself.

Treatment of the apparently drowned.

34. In assisting drowning persons, great care should be taken to avoid being caught hold of by them. They should be approached from behind, and should be kept distant from the swimmer by the intervention of any thing at hand, and as a last resort by means of their own hair. If possible, they should be kept on their backs, and should they attempt to seize the swimmer, must be cast loose at once.

Two swimmers treading water may assist a drowning person, by seizing him, one under each arm, and carrying him along with his limbs motionless.

The following directions for the restoration of the apparently dead from drowning, are in substance those practiced by the Royal National Life-Boat Institution.

a. Send immediately for medical assistance, blankets and dry clothing, and proceed to treat the Patient *instantly* in the open air, with the face downward, whether on shore or afloat; expose the face, neck, and chest to the air, and remove all tight clothing from the neck and chest.

The points to be aimed at are—first, the restoration of breathing; and secondly, after breathing is restored, the promotion of warmth and circulation.

The efforts to *restore breathing* must be commenced immediately and energetically, and preserved in for one or two hours, if necessary. Efforts to promote *warmth* and *circulation*, beyond removing the wet clothes and drying the skin, must not be made until the first appearance of natural breathing; for if circulation of the blood be induced before breathing has recommenced, the restoration to life will be endangered.

To Restore Breathing.

b. To Clear the Throat.—Place the patient on the floor or

ground with the face downwards, and one of the arms under the forehead, in which position all fluids will more readily escape by the mouth, and the tongue itself will fall forward, leaving the entrance inte the windpipe free. Assist this operation by wiping and cleaning the mouth.

If there be only slight breathing, no breathing, or if the breathing fail, then—

To Excite Breathing.—Instantly turn the patient on the side, supporting the head, and excite the nostrils with snuff, hartshorn or smelling salts, or tickle the throat with a feather, &c., if at hand. Rub the chest and face warm, and dash cold water and hot water alternately, on them. If there be no success instantly endeavor—

To Imitate Breathing.—Replace the patient on the face, raising and supporting the chest well, on a folded coat or other article of dress.

Turn the body very gently on the side and a little beyond, and then briskly on the face, back again, repeating these measures cautiously, efficiently, and perseveringly, about 15 times in the minute, or one every four or five seconds, occasionally varying the side.

[By placing the patient on the chest, the weight of the body forces the air out; when turned on the side, this pressure is removed, and air enters the chest.]

On each occasion that the body is replaced on the face, make uniform but efficient pressure with brisk movement, on the back between and below the shoulder-blades or bones on each side, removing the pressure immediately before turning the body on the side.

During the whole of the operations let one person attend solely to the movements of the head and of the arm placed under it.

[The first measure increases the expiration—the second commences inspiration.]

The result is respiration or natural breathing;—and, if not too late, Life.

Whilst the above operations are being proceeded with, dry the

hands and feet, and as soon as dry clothing or blankets can be procured, strip the body, and cover or gradually reclothe it, but taking care not to interfere with the efforts to restore breathing. These efforts will generally prove successful in less than five minutes ; if not, proceed as follows :

c. To IMMITATE THE MOVEMENTS OF BREATHING.—Stand at the patient's head, grasp the arms just above the elbows, and draw the arms gently and steadily upwards above the head, and *keep them stretched* upwards for two seconds. (By this means air is drawn into the lungs.) Then turn down the patient's arms, and press them gently and firmly for two seconds against the sides of the chest. (By this means air is pressed out of the lungs.)

Repeat these measures alternately, deliberately, and perseveringly, about fifteen times in a minute, until a spontaneous effort to respire is perceived, immediately upon which cease to imitate the movements of breathing, and proceed to induce circulation and warmth.

d. To PROMOTE WARMTH AND CIRCULATION.—Commence rubbing the limbs upwards, with firm grasping pressure and energy, using handkerchiefs, flannels, &c. [By this measure the blood is propelled along the veins towards the heart.]

The friction must be continued under the blanket or over the dry clothing.

Promote the warmth of the body by the application of hot flannels, bottles of hot water, heated bricks, &c., to the pit of the stomach, the arm-pits, and to the soles of the feet.

If the patient has been carried to a house after respiration has been restored, be careful to let the air play freely about the room.

On the restoration of life, a teaspoonful of warm water should be given ; and then, if the power of swallowing has returned, small quantities of wine, warm brandy and water, or coffee should be administered. The patient should be kept in bed, and a disposition to sleep encouraged. This treatment should be persevered in for some hours until recovery is made. The following cautions are necessary :

Prevent unnecessary crowding of persons round the body, especially if in an apartment.

Avoid rough usage, and do not allow the body to remain on the back unless the tongue is secured.

Under no circumstances hold the body up by the feet.

On no account place in a warm bath, unless under medical direction, and even then it should be employed as a momentary excitant.

Return of Course of Gymnastic Training of the.....Class, at the U. S. Military Academy, from .....188 to 188

NAME.	AGE.	MEASUREMENTS.					INCREASE.					No. of days absent
		HEIGHT.	WEIGHT.	CHEST.	FOREARM	UPPER ARM.	HEIGHT	WEIGHT	CHEST	FOREARM	UPPER ARM	

	WEIGHT	CHEST	FORE-ARM	UPPER ARM
The Smallest Gain..				
The Largest Gain...				
The Average Gain..				

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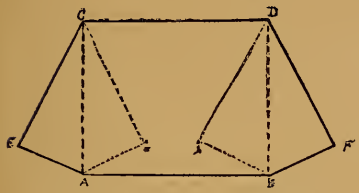

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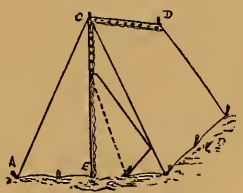

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